

India's Annual Conferences.

BEING A COLLECTION OF ALL THE PAPERS
READ AT THE

2ND INDUSTRIAL CONFERENCE

AND THE PRINCIPAL SPEECHES

DELIVERED AT

THE 22nd INDIAN NATIONAL CONGRESS,

THE 20th INDIAN SOCIAL CONFERENCE,

THE 3rd INDIAN LADIES' GATHERING,

AND THE

ALL-INDIA TEMPERANCE CONFERENCE

HELD AT

ALCUTTA, DECEMBER, 1906

WITH

**SOPIHICAL CONVENTION LECTURES HELD AT
ADYAR, &c., &c.**

MADRAS:

SRINIVASA VARADACHARI & CO.

1907.



MR. DADHABHOY NAOROJI,
President, The 22nd Indian National Congress,
CALCUTTA, 1906.



CONTENTS.

PAGE

THE ADYAR THEOSOPHICAL CONVENTION.

Mrs. Annie Besant's Lecture I—"Brahman is All" ...	1
Do. do. do. II "Iswara" ...	4
Do. do. do. III "Jeevatma" ...	7
Do. do. do. IV "The Wheel of Births and Deaths." ...	10

THE MAHOMEDAN EDUCATIONAL CONFERENCE.

President's Address ...	1
Mr. Archbold's Speech ...	3
Moslem All-India Confederacy, Inauguration at Dacca ...	4
Nawab Vicar-ul-Mulk's Speech ...	4
Nawab of Dacca's Speech ...	5

THE INDIAN LADIES' CONFERENCE.

Her Highness the Maharani of Baroda's Presidential Speech.	1
------------------------------------------------------------	---

INDIAN NATIONAL SOCIAL CONFERENCE.

Sir Chunder Madhub Ghose's Address ...	1
----------------------------------------	---

TEMPERANCE CONFERENCE.

Reference to Mr. Samuel Smith's Death ...	7
Presidential Address of Mr. Samuel Smith, read by Mr. Jones, M.P. ...	ib.

SPIRITUAL LECTURES.

Hon'ble Mr. P. Ramanadhan on "Vedanta and Saiva Sidhanta" ...	1
Do. do. on the "Uplifting of the Soul" ...	7
A Conversazione at the South Indian Association ...	11
An interview with the Hon'ble Mr. P. Ramanadhan, by a representative of the <i>Hindu</i> ...	16

THE INDIAN INDUSTRIAL EXHIBITION.

Brilliant Opening Ceremony ...	1
The Secretary's Statement ...	3
The Maharajah of Durbhanga's Speech ...	5
The Viceroy's Speech ...	6

THE 22nd INDIAN NATIONAL CONGRESS, 1906.		PAGE
Hon'ble Dr. Rash Behari Ghose, C.I.E.—Speech as Chairman of the Reception Committee	...	9
Mr. Dadabhoy Naoroji's Presidential Address	...	25

The Partition and Boycott Speeches.

Nawab Atikulla of Dacca's Speech	...	56 ¹
Babu Surendra Nath Banerjee's Speech	...	56 ²
Ambica Charan Majumdar's Speech	...	56 ³
Bepin Chandra Pal's Speech	...	56 ¹ ³

THE SECOND INDUSTRIAL CONFERENCE.

Mr. R. C. Dutt on "A Year's Out-turn of Work"	...	57
H. H. The Maharaja Gaekwar of Baroda's Inaugural Address.	...	62
The Hon'ble Mr. Vithaldas Damodar Thackersey's Presidential Address	...	85
Alakh Dhari, Secretary, Upper India Glass Works, Ambala City on "Glass-Making"	...	102
K. C. Dey, Esq., M.A., I.C.S., on "Co-operative Credit Societies"	...	111
Do. do. on "A Central Bank to Finance Co-operative Credit Societies"	...	120
Babu Nitya Gopal Mukerji, M.A., M.R.A.C., & F.H.A.S., on "A Bird's-eye View of Indian Sericulture"	...	123
D. N. Mookerji, Esq., M.R.A.C., Assistant Director of Agriculture, Bengal on "Cotton Cultivation in Bengal"	...	142
A. E. Jordan, Esq., A.M.I.M.E., F.S.A., of Messrs. Martin & Co., Calcutta, on "Indian Sugar Development"	...	149
Alfred Chatterton, Esq., Superintendent, School of Arts Madras, on "Chrome Tanning"	...	156
J. N. Banerjee, Esq., Calcutta, on "Essential Oils"	...	174
David Hooper, Esq., F.I.C., F.C.S., F.L.S., Industrial Section, Indian Museum, on "Indian Essential Oils"	...	175
Sir Guilford Molesworth, K.C.I.E., on "The Effect of Import Duties on Industrial Development"	...	187
Appendix I	...	196
Raoji B. Patel, M.R.A.C., on "hand-loom weaving in India."	...	198
Rai Sahib Upendranath Kanjilal, F.L.S., on "the best Indian woods for the manufacture of matches and match-boxes."	...	206

The Adyar Theosophical Convention.

MRS. ANNIE BESANT.

FIRST LECTURE.

“Brahman is All.”

In spite of the very short notice, there assembled at the Theosophical Society Hall at Adyar, a very large gathering to hear Mrs. Annie Besant's discourse on the above subject. Punctually at 5 P.M., on 28th December, 1906, Mrs. Besant appeared in the Hall amid the cheering of the audience; and before dealing with the subject of the lecture said “Brothers, I cannot begin speaking to-day, the first Convention, with which I have ever begun to deliver a lecture, without our beloved President-Founder at my side. I cannot begin without sending to his sick room, a message of love and a message of loyalty, a message of reverent sympathy to that most loyal, that most faithful servant of the Blessed Master (cheers), who for one and thirty-years, has carried the banner of the Society, unswervingly in spite of every difficulty, of every trouble, of friends who have betrayed, of enemies who have attacked, but who has never wavered, who has never faltered, and never been shaken of his loyalty to them, so may they ever be with him, may they receive him, when he passes from us to a fairer life.” She then delivered a very interesting and instructively eloquent lecture, extending over an hour, in the course of which, she said, that last year, she spoke to them about the Bhagavadgita, the Text Book of the Bhaktas, the Devotees in the world. This year she would speak to them, of the essence of the Upanishads, the Text Book of the Gnani. They speak of Brahma, the God, or the Universe of Man, the Nature of God, the Nature of the Universe, or the Nature of Man. They treat of these thoughts in the abstract only, not in the concrete. Only an intelligible exposition can be given by words. The highest teaching cannot be conveyed by mouth to ear. The supreme initiation must be taken by each self for itself. Only Brahma within can know Brahma without. That must be taken by our self for itself, when it is ready to open out into the fullness of its own Divinity. None else may give, none else may impart it until at last the most splendid initiation is of itself is taken. What is Brahma Vidya? It is the central truth of the Upanishads. *Tathvam Asi* “Thou art that.” Such is the final truth, such is the goal of all wisdom, of all Devotion, of all Activity. “Thou art that.” Nothing more than that, there is

not. That is the last truth of all truths, that is the final experience of all experiences. Not long ago, reading in a great English Review, she came across an article called, "The Vital Value of the Hindu God Idea;" and in that article it was remarked, and remarked quite truly, "it is doubtful," says the writer, "if in any other country than India, whose large proportion of reverent and high-minded have agreed and acted accordingly with the great and eventual and happiest use to which they can apply themselves was the assiduous of the intrepid finding of God, all else in life being counted as subordinate in him." The writer here does not exaggerate. That is the central thought of the Hindu mind. The identity of the Universal with the particular makes the knowledge of Brahman, of God, possible to man. You could not have knowledge but for that. In the world outside that, you can only know that which you can answer from your body, and your mind. You can only know what you can see. Only when you have in yourself the self you can see, hear, &c. Therefore, you share His nature and He is in you; therefore you can know. To the educated Hindu, the writer says, the most significant fact is the idea of self-placed along with the idea of the mind. That is the value of the Hindu God idea. There is the only one consciousness and that is God consciousness. It may be the consciousness of the grain of sand which resists when the wind lifts it. All is God consciousness, for there is none other, and consciousness unfolds from the grain of sand to the plant, from the plant to the animal, from the animal to the man and from the man to the Devas. The question in the West "What is God" is of no meaning. It is not a question of creation but a question of manifestation. The existence of the self. On this there is no faltering, there is no evasion. The soul, it is written, cannot be gained by knowledge, nor by understanding; it cannot be obtained by a man without strength, nor by indifference, nor by devotion, nor by knowledge unwedded to devotion. The Mandukya speaks yet more strongly for he declares that existence is invisible, imperceptible, intangible, and incapable of proof. The only proof is the self and that is in each of you. That is the surest of all sure things, the self within you and the self within me. No proof can shake you out of the idea of your existence. It does not come by knowledge, reasoning or devotion. It is the one sure proof, the self. There is but one method—meditation and noble living. Self-control can be attained by constant practice of meditation, devotion, righteousness and love. These are the ways by which the proof of the divinity of the self within is found. These are obstacles rather than helps. Moksha is yours already but its value you know not. A man may have a pearl which he has mislaid; he is looking for it where it is not; and so is Moksha. All that you have to do is to remove the obstacles. Moksha is not found by words. Turn your eyes inward and look at the Majesty of the self within you. The proof of the self is within

us and not without us. Criticism cannot touch self. What can science do? It may pierce the farthest star but, Brahman is beyond what is beyond. Truth alone conquers and not falsehood. This Truth is the Magna Charta of the intellectual freedom. One cannot wander outside the self, for self is everywhere. We have to learn, therefore, something of this great self. The self, the supreme syllable, the *Our*, the feet are the parts, the parts are the feet. The *Our* is the partless Brahman. The fourth is partless, actionless, blissful and without duality. *Our* is indeed the self, so says the Mandukya. The one is the three; the three are the one. Easwara, His Maya and His Work we shall take the three syllables as three states of consciousness. Vaisvanara—the waking consciousness, the vital self from Atman, Personal self; that which exists in consciousness imbedded in physical matter. Then in subtler worlds there is the super-waking consciousness, the dream consciousness, the individual self—the Jeevatma. The Monad is the second stage. The third is the stage of *pragnya*. He who is all-knowing, the perfect in knowledge is the Easwara, the Saguna Brahma, the Pervader of all, the Outer-Atma, the Pratyatma. The Saguna, the Supreme Iswara, and the Jeevatma are scattered all over the world.

In the Chandukya you will find words reduced to letters. The ancient Hebrews had these and all had these. They are sacred words. They are not pronounced by lips. They are known by consciousness. They are words of power. The Chandukya says "*Our* verily is this all." It is the partless Brahman; it is the all. Two things which are identical with the same are identical to each other. Therefore Brahman is all and all is Brahman. Para-Brahman and Apra Brahman is *Our*. But there is mystery and the Upanishad explains it. When the syllables are taken separately then the lower Brahman is indicated. But when the word is used as one syllable then it means the Supreme Brahman. When we again turn to the Chandukya we find "*Verily is this all Brahman.*" Therefore it is born, thereunto it is dissolved, and therein it is manifested. It is established in the Supreme imperishable self. Take your own mind arising therefrom, vanishing thereunto and contained therein. All that ever was in the past, all that is in the present, and all that is in the future. All is in that immeasurable. Out of that immeasurable fullness as waves from ocean, a Universe arises and vanishes into that as the waves. There is none other. There is naught else. In the imperishable Brahman beyond this, there is the Be-ness. So said H. P. B. and the Chandukya says "Before that one existence, before that verily was one non-existence. The word existence is derived from the Latin *excisteri*, being that is out so to say. Nothing comes out from nothing. It always is. How may we define it, without which is everything indivisible, partless; where the voice doth not go, nor the Ear, nor the Eye,

nor the Mind. Thus we hear of the higher teachings from the Elders without which the mind thinketh not, that by which the mind thinks; without which the Eye seeth not but that by which the Eye sees; without which the Ear heareth not but that by which the Ear hears. Except with the idea of self nothing can be done or perceived or felt.

SECOND LECTURE.

"Iswara."

There was again the next morning a large audience to hear Mrs. Besant's lecture on the second of the series of lectures on the Upanishads. Mrs. Besant addressed for a full hour in her usual eloquent style. She observed that the subject before them that morning was in some ways more difficult than the subject of the previous day. It was possible for them by an effort and a strain of the mind, to recognise intellectually the great truth that "Brahman is all," but when they came to deal with the question of manifestation, when they came to endeavour to realize intellectually what was meant by the coming of existence out of a long existence of being from long being then they had a problem so difficult that even the text-book of the *Gnani* shrank from explanation, for they found that when it was said "how can this be," when the pupil asked the teacher how could the one come forth, the teacher does not try to explain but only reiterates the truth "from long being forth the Being, one secondless. Why is there no effort at explanation? Where surely explanation if such there may be is above all to be looked for. The reason is that none may hope to understand by the exertion of the intellect, by the use of the reason, pure and simple; a spiritual inspiration was necessary and an insight that goes beyond the power of the mind and calls into activity *budhi* as the vehicle of the self; and the truth was that you will never understand these fundamental births by any amount of teaching but you could only understand them by meditation. From non-existence came forth the existence. In all great words there are two fundamental meanings, one is the higher and the other is the lower. *Asat* is such a word and *Tamas* is also such a word. This last word serves as a good illustration. All comes forth from *Tamas*, not the lower *Tamas*, but the higher. The equilibrium of the three *gunas*, the quietitude, the perfect stillness and the great inertia. One Brahman we have in those sacred words, the words of power. If you think of that great sacred word "Pranava," the single syllable means Nirguna Brahman. The same word uttered in three syllables denoted Saguna Brahman. But what did it indicate? It meant that he was the same and not another. But the present attributes made external difference, where the one is without

attributes, the other is spoken as *satchit ananda nirguna Brahman*. Think that over in your meditation and try to catch the meaning. The ultimate antithesis of existence are *Iswara* and *Maya*. From non-existence was born existence and he verily is the *Embodied Self* of that. The Briha says "Infinite that, infinite this and from the Infinite the Infinite arises;" the Infinite verily remains, *Our* is the Ether, the *Akasa* is the Brahman. Two Infinities cannot be and yet the fact of the manifestation with the attributes makes an apparent difference, where truly there is none. Another *sloka* helps us. The two bodies is Brahman, *Saguna Brahma* and *Apara Brahma*. The two bodies form and formless, mortal and immortal, stable and unstable, manifest and beyond. A well-known *sloka* in the *Bhagavad-Gita* may also help them, where Sri Krishna is explaining this great mystery. Sri Krishna speaks of himself. His higher nature he speaks of as *Deva Prakruti*, the Divine substance. Then, he says higher than that is another, that is the unmanifested. The manifested is the third body of the Brahman. Then, beyond the unmanifested there is another, that hidden self—formless, immortal, unstable and beyond, and between these two the link joins with the higher and the lower unmanifested. For without it the Universe may not be. That is the third letter of the three syllabled *om*. The mortal is the creator and destroyer and the immortal and imperishable is the *Hara*. He is one God that rules, the perishable and of the self. The *A* in the three lettered *Om* is the first of the letters, without which the pronunciation of no letter is possible. The *U* is the second letter. It is the *Pradhana*, the not self, for we only know it by the thinking of the self. It is reached by denial, not by affirmation. These are the two antithesis, the northern and the southern Pole between which the web of the Universe is woven, father and mother, H. L. Blavatsky called them, father the life giver, the mother the form giver. The son is the web woven by them. When the affirmation and negation ceased then *Easwara* and *Maya* ceased to manifest. *Maya* is necessary for manifestation. *A* is the self, *U* is the not self, and the mortal in which all affirmations and negations are summed up, is the changing declaration of many that were born, and that union is declared in the *Sweteswara* where it is said "united with *Maya*, he emanates the Universe. The emanation is sometimes called *Srishti*. It is that which gives all life. In the *Bhagavad Gita* it is said "there is nothing moving or unmoving that may exist bereft of me." Chandukya says that willed may I be many, may I be born. But the Supreme *Easwara* by the expression of his will becomes the many, and he, brings out his duality between Himself and the *Maya*. *Maya* is inseparable from her Lord. No *Maya* is *Prakruti*. The owner of *Maya* is *Maheswara*. So we have the principle of separateness. That is the origin of all

beings. Maya is called Prakurti, sometimes Pradhana, sometimes Akasa. This Akasa is written in Tithetriya as the body of the Brahman. He is the root of all names, and yet has none of all, for names are only descriptions. They do not define, but they simply point to the One, which the Upanishads speak of OM as the great imperishable Devatma. Then *Aham* is I. That is the spark of His nature within us. *Aham* is sometimes called Purusha, the man, the typical, the one which is the last limit and the highest goal. He is hidden in all creatures, and he is not far from any one of us. Where He is manifest, everything else is manifest, and where He is not, naught else exists. An English poet by some strange intuition catches the deep reality hidden within himself, called upon his own spirit to speak to him, because he was himself closer than breathing nearer than hands and feet. Is there any teaching so glorious and so inspiring as this. He that beholds the Universe, lives hidden in the hearts of us all. It is the gospel on which alone our hearts may rest. Everything else may fail but the self is ourselves. It can never fail. The Upanishads take a great deal of trouble to explain this; "By him thou whom nothing is greater than whom nothing is subtler and older who stands in the heavens unshaken like a tree." If we turn to the great discourse of Yama, we find how he explains in detail, how this is the Sun that dwells in the heaven as one that dwells in the atmosphere, as the sacrificer on the earth, as a guest and a man: in truth it dwells in either; it is born in the sacrifice, it is born in the mountains. So again Mandukya says "The Earth is the supporter of us all, &c.," and that the Supreme Self is dwelling in the hearts of all beings. "I am He. If we live, we are parts of him." *Moksha* is not obtained. It is yours, but there are obstacles. Your bodies blind you. They are not like the glasses through which the light shines. Purification of the vehicle is demanded before the man can see the majesty of his self. The self changes not. It is there. The sun is always there though the clouds may hide it for the time being. Purify your vehicles, though the sun in your heart may shine forth before your gaze. Matter must not bind the self. The vehicle must cease to obstruct the manifestation of the self. The self is there like the sun clouds may hide it. The work of all religion is so to purify the vehicles to melt away the clouds that the sun may shine in our hearts. Maya is manyness. We cannot get rid of it by a slow process of purification, by realising that self is one-ness of Maya. We are now owned by Maya. The Upanishads say that the bonds of the heart must be broken by truthfulness, righteousness, knowledge and devotion, and then we become the master of Maya. We must have so purified the Maya as we may shine. The worst of all delusion is to declare with impure lips I am Brahman. The one supreme Eswara who is Brahman itself must be distinguished from the Easwaras of

the various Universes. These Easwaras are objects of worship to those who cannot rise to one Easwara. Is division of himself into Easwara and Maya is the first sacrifice. Every Easwara is the result of the evolution in the Universe but the Supreme Easwara is beyond Evolution. The oneness and the Manyness of the Universe are thus reconciled. The one is the perfect reconciliation of all. Throw away the not self and the self will shine. In the utter negation of the manyness, you know that I am He.

THIRD LECTURE.

"The Jeevatma."

On the 30th December, morning, Mrs. Besant announced that Colonel Olcott would be present at the closing of the Convention this day at 2 P.M., that it is the wish, the most natural wish that he should close this last Convention as he had done for these one-and-thirty years since he opened the first Convention.

She then began her discourse by saying that they had seen that Brahman is all; then they pierced that which is dark by intolerable light and saw the coming forth of the one, the Universal self the Saguna-Brahman, the Eswara himself. Then they followed step by step the manifestations which manifested after him. As the Upanishads say, when He is manifest, all is manifest after him. The manifestations are Easwara, the world systems and the Universes. We come now to the point of our study when having seen the early stages of manifestations, we have to consider about the inhabitants of these worlds.

How does the central life divide itself among the many? What is a Jeevatma? What is the difference between Jeevatma and Eswara? That is the problem they had to seek to solve that morning.

Understanding the nature of the Jeevatma, we may study the path of realising itself.

In the next lecture we shall consider in more detail that path in the wheel of births and deaths in connection with that which is Eternal, Unborn, and Undying, sharing the Eternity with God himself.

Looking over any world-systems or worlds, we see living creatures and some not regarded as living. There is no difference save in the degree of life, and no fundamental separation. A grain of sand is Jeevatma in dense veil of matter, the loftiest Deva is the same thing—the Jeevatma, but the veil is thinner and matter less gross. The life shines out in the one, while it is obscured in the other. Everything has a Jeevatma at its heart.

All manifestation is by trinities, by triads, by threes. This is natural because the primary manifestation showed the triple nature spoken out in A. U. and M. It must be reflection after reflection, the object reflected being triple, the reflection also must be triple.

The Chandukya refers to the three bodying forth from the Easwara. "I shall become manifest in my name and form." He entered into fire, water and earth, which again became threefold by his entry, thus producing a new set of triads and so on. Each member of a trinity reproduced its nature in another trinity. The Universe is filled with trinities or reflections of the life from which everything came forth. The Jeevatma is Easwara with name and form, i.e., individualised and particularized. The Jeevatmas have name and form, says the Chandukya: "This is Brahman, this Indra, this Prajapati, this all Devas, this the five elements, whatsoever has breath, immoveable as well." Brahadaranyika says that the immortal is hidden by existence; Existence is part of *Maya*. It limits the illimitable. Life is immortal. Name and form are existence which conceals the life. According to Chandukya the same Brahman is either within the heart and it is within the man also. Such then is the Jeevatma.

When the self is manifest, all is manifested after him. No matter if Upadhis fetter you, provided you recognise the one truth just as the sun burnt the clouds that obstructed, so the self burnt all that obstructed until it shone forth. Name and form imply limitation, says the Brahadaranyika, powerful the one, powerless the other, all knowing the one, ignorant of the other. He is bound by the condition of the enjoyer, that and nothing else is the difference. Break the bonds and he is free. Within the bondage he is never free. He in truth is not bound. It is the vehicles that are bound. Then what is all this for? Why should the Jeevatma partake of the nature of Easwara? By what strange mystery should he become ignorant and powerless? Why? Because in that world of the highest Gods, that world in which knowledge is perfect, and omnipotent, there is the finest matter and the subtlest limitation of matter. As you limit, you define. As you define, the outlines become more and more clear. What Easwara has done before that the Jiva does, now because he must become the master of *Maya*. By our own will we came, that we might exercise our power. We came knowing it and willing it. Willing, not to rest in that lofty region, but willing to be free everywhere, in every condition of matter, not only in the region of subtlest matter which is our own home. The nature of life is to will to live. There is joy in becoming the many, there is joy in scattering forth the power—the life. So we willed with Easwara, that we might realise our freedom. In order that we the parts may become the whole, we got into

temporary bondage. None compelled us to come into this Universe. We came of our own free will ; because Eswara willed, we willed as a part of Him, in order that we may be omnipotent in the grossest matter as in the supernal regions.

Says Aitreya, in the origin this was verily the One Self. He willed, " let me emanate the words."

The three dwelling places of Eswara as Jeevatma are the waking consciousness, the super-waking consciousness and the highest consciousness.

In the variety of manifestation we ought not to lose the unity of consciousness.

The triple Atma manifests as *Ischa Gnana* and *Kriya* ; but it is still the same one Atma. Taitreya says that each lower is the body of the higher and so from Eswara downwards.

Man is the form of being in whom matter and the self are balanced. That is the occult definition of man. Man is the battlefield of the Universe in which Eswara and Maya are contending for lord-ship. *Gyana Sakti* or the power of knowledge is the power of the triple Atma, and *Kriya Sakti*, the power of action is the lower atma.

Two birds live on the same tree, the tree of the body. The one enjoys and the other witnesses. The two birds in man are the triple *atma* and the lower *atma*. In the Rishis they are the Jeevatma and the triple atma. In the highest sense these two birds are the Nirguna and the Saguna Brahman.

All knowledge resided in the triple Jeevatma. Their powers are taken by the Prana, the Jeevatma. Then each power becomes a *Kriya*.

By Prana the triple atma dwells within us and through prana it works within us. Atma desired to see, then there was the eye ; desired to hear, then there was the ear ; desired to speak, there was the tongue ; desired to think, there was the mind. That is the order of evolution, not atma, the production of the body.

There is nothing in you which is not in the triple atma. All came out from His Will to manifest and to enjoy. So it is written in the Upanishads : " From the self is born this Prana, we should thereby know the self." On this understanding of the self, all yoga is built up. Hence Prana is spoken of in the yoga. Prana is the self, the spirit within you. He who realises the self is god. He seeks not to hide himself. He is the fearless Brahman. It is all himself. There is nothing outside you that can work your evil ; one part of you strikes the other, but you are not aware of it. It is all one living self. That self is the fearless Brahman.

FOURTH LECTURE.

"The Wheel of Births and Deaths."

On the 31st December, morning, Mrs. A. Besant delivered one of her most interesting, instructive and eloquent lectures on the Upanishad series of lectures on the above subject. In the course of her discourse extending over an hour Mrs. Besant said that this morning she would try to follow the Jeevatma through his human stage, remembering that behind him there is a sub-human stage through which he is ascending, remembering that beyond him there is a superhuman stage to which inevitably he will ascend. Therefore, the work to-day before them was to trace that human passage and try to understand the nature of this wheel of births and deaths to which Jeevatma was bound through his long human life and how the bonds may be broken and how the Jeeva can show out its inherent liberty, the freedom which is His, because he is Brahman. In the Upanishads the word wheel is used to intimate to the student the recurring repetition of a certain sequence of events; for you read that in the infinite Brahman wheel, the *Hamsa*, the pilgrim or the wanderer, the *I*, *Aham* is meant. The *I* or *Aham* in the declaration of the unity of particular *I* with the Universal *I*. The wheel revolves by the splendour of the supreme. It does not move of its own nature as some think. The supreme is the pivot on which the universe evolves.

In order to gain experience the Jeeva is bound by the vehicles into which he enters. Therefore it is not the Jeeva that is bound but the vehicles. There are ever so many smaller wheels working within the vast wheel of the Universe and the smaller wheel is confined within the three worlds, and in the Triloki of the Upanishads there is always the succession of births and deaths. Yama or the Lord of Death has power over all the three worlds—the world of man, the world of Pithris and the world of the Devas; in the intermediate or in the Pithri world the man could see the world of men on one side and the world of the Devas on the other. Only in the higher worlds is the duration of life longer, but death is inevitable every where. In the language of the Theosophist these worlds are known as the physical, actual and the mental. In all the three worlds Jeeva moves, for he has the particular function of unfolding in each of them. In the physical world it is, that the seed is sown and experience gathered and consequently it is here that the division is greatest. In the astral world, the Jeeva carries the memories of the physical life as also the fruitage of the seeds sown and by a reflection on the past works, changes his experience into faculties. For gaining fresh experience the Jeeva draws together a new body in all the three planes. Birth and death are relative terms and mark the succession of experience in the worlds. In the lowest type of

man the Jeevahmic powers are very little unfolded. In man alone the "chit" aspect of Iswara shows itself out. The nature of Jeeva is three-fold,—Ischa, Gnana and Kriya. These aspects belong to the sun-light and cannot be given up. We cannot destroy them because they are of the nature of Iswara himself, and when one is asked to give up desire, knowledge and action, it is always meant the lower and not the higher, for lower aspects always require purification. The Jeevatma in the savage is in you and me and in the Rishi but in order to realize Brahman he has to go through the wheel and learn in the intermediate stages and then the germ of his mind in him begin to work and appreciate and this will have to be repeated several times. In the astral he realises his mistakes and sees his folly and then he realises his mistakes and then he comes back with that experience in the world. The Upanishads say that man's desire carry him into places where forms are found which gratify those desires. He who desires wanders from world to world and the desires of all world equally bind the desires of the subtler worlds only forge stronger chains in proportion to their subtlety. The Kato Upanishad says that man becomes immortal when the desires of his heart are broken. Upanishads say that man is created by thought and that as man thinks he becomes; and that he must think of Brahman in order to break the bonds woven by thought. The soul is seen by thinking and not by the eye. The self manifests itself only by the thought of the light. Mandukya says that when the intellect and the organs are purified the self manifests itself. The Upanishad further says that man is made by work and that as he works he obtains. To get rid of the chains of work, he must gain knowledge of his identity with Brahman and know that it is not. He but it is the self that does. Then the binding nature of Kriya is destroyed.

In sleep the world of super-waking consciousness, the self withdraws from the body through *Prana* and when he awakes the *Prana* goes forth to the several stations. The awaking from sleep is the symbol of the awakening from death. There is no destruction after death: so long as the Jeeva is blinded by matter he must go by the road by which he returns, *viz.*, through the three worlds. In the *Davayana* path, light is used and as long as the shadow remains the Jeeva must pass through the *Pitrayana* and he who realizes himself as spirit and not as matter takes the *Devayana* path from which he does not return. As long as there as we perceive difference, we must pass from death to death. It is possible to realize that we are the self. None can see it and it is possible to identify himself with it—subdue the senses, concentrate the intellect, purify the body and meditate. Higher than the senses are the objects. Higher is *Manasu*, Higher *Budhi*, still higher is the *Atma*, still higher

is *Iswara*. When he thus observes Brahman he beholds the highest identity. We must pierce through *Maya*, see the self in others and the shadow will fall away and the light will manifest itself. Right thinking, right believing are essential. Think the noblest, the highest, and the purest. Keep your ideals high and man rises by being loved in the midst of sins and follies. Such are our final lessons and the Upanishads say "that the soul which sees God finds its true end."

—*The "Hindu."*

The Mahomedan Educational Conference.

The All-India Mahomedan Educational Conference at Dacca attracted influential delegates from all parts of India. A great camp had sprung up in Shah Bagh.

An artistically designed pandal, where the meetings were being held was filled, with over 3,000 delegates and spectators, amongst whom were most of the officials and European residents who numbered another 1,000. The proceedings were marked by the greatest order, enthusiasm and earnestness. The speeches, which were carefully thought out, were followed attentively by the audience.

When the Conference opened, the Nawab of Dacca, in uniform welcomed the delegates and proposed Mr. Justice Sarfuddin to the chair. In his speech he referred to the great trouble and expense the delegates had been to in coming from considerable distances, and trusted, however, that they would be repaid by the sense of the valuable work they were doing for their race. He referred to the sad death of the Nawab of Murshidabad, and touching on the past history of Dacca and Eastern Bengal showed what the "partition" had done for the people and the province.

The proposal was seconded by the venerable Nawab Mohsin-ul-Mulk, who thanked the Nawab Bahadur and members of the Reception Committee on behalf of the delegates and the resolution was carried *nem. con.*

President's Address.

The President was received with cheers. He delivered his Inaugural Address in the vernacular. He began by referring to the responsibilities of his position and the short notice given him of the Conference. He said he had little new to say. Conference topics were well worn and the action of the Conference recognised every part of India. He, however, exhorted his audience, as Moslems, to prove worthy of their glorious past and to strive to reach forward to the goal which lay before them. They had no reason for despondency or despair and possessed the full capacity to advance. The proper use of the faculties innate in them would bear the desired fruit. For a time it seemed as if the community had slumbered and ceased to be true to itself, but now signs of life and activity were visible on all sides, which encouraged them to persevere.

But they must wake up and work. Other communities were far in advance in the race of material progress. At the same time

there were some changes that must be avoided during the course of this struggle to regain lost ground. Mahomedans must not fall into the habit of imitation or into error. The speaker explained that true progress was based upon proper education. For this object Aligarh College had been founded. Referring to that institution he strongly advocated raising it to the status of a University. This had been the dream of Sir Syed's life. Now Government, seeing the efforts of the community to advance, and recognising the true loyalty of Moslems, would sympathise with and assist them.

In the course of his speech the President also referred to the All-India Mahomedan Nobles' Deputation in October 1906 to H.E. the Viceroy. The leaders of the community, he said, seeing that Government had come to recognise the importance of the Mahomedan factor in the Indian question and to recognise the loyalty of the race and the fact that its interests had suffered much in the past, knew that the time had come to place their case directly before the Supreme Government. Here, paying a tribute to the work of Nawab Mohsin-ul-Mulk in this connection, he remarked upon the surprising and significant unanimity of thought and action that the deputation had evinced and the exceedingly short period of time in which the representatives had come together and decided upon the course of action to be followed. The labours of this deputation were already bearing fruit. Its importance had been fully-recognised by the Press, not only of India but of Europe. For the unprecedented success that had attended its work the thanks of the community were due to the King and to the Viceroy. These thanks, he said, should be shown not by words alone but by actions. While the true Ruler was he who had the good of his subjects ever in mind, the true subject was he who placed his entire faith in the ruler.

The speaker next dwelt at length upon the advantage and necessity of acquiring, by means of translation, all valuable information and the stores of wisdom available in the languages of foreign peoples. This was necessary for the hastening of the advance of Indian thought and culture.

After the Presidential Address, resolutions of thanks were passed, unanimously expressing gratitude to Sir Bampfylde Fuller for the interest shown and help afforded by him towards Mahomedan education in Bengal and to Sir James La Touche in the United Provinces, and also a resolution of congratulation to Mr. Morrison on his call to the Indian Council.

Resolutions dealing with Mahomedan education in Bengal and thanking Government for accepting the scheme for Moslem hostels proposed by the Provincial Congress were also passed and one asking for full information regarding the Mohsin Fund.

After the passing of these resolutions the Nawab opened the Female Arts Exhibition and Mr. Sharp opened the School Museum Exhibition.

Speech By Mr. Archbold.

At the third session, held last night, Mr. Archbold, Principal of Aligarh College, presided. His address dealt with the rising aspirations of New India, but said India wanted social reform rather than political change. The hope of the Moslems becoming a power lay in their acquirement of true education. They desire to, and must, work with and not against Government.

Resolutions dealing with reforms in the Madrassahs in Eastern Bengal were passed.

Mr. Archbold, speaking in support of these quoted from Sir Syed Ahmed's speech on the 20th September 1898, at Benares Institute, and while on this point he advocated the formation of local Committees in all towns to prepare lists of useful foreign books, and undertake their translation into vernacular. These Committees, he said, would keep the Conference in evidence throughout the year. The speaker then laid great stress on the study and cultivation of science and technical subjects, insisting at the same time on the necessity for the inculcation of habits, discipline and the cultivation of good manners. These, he said, lie at the root of all true education and the lack of them has been only too often deplorably evident amongst certain classes of the student community of India. He regretted that the methods of teaching in vogue were most unfavourable to the cultivation of real independence or originality of thought of ideas in schools. A remedy for this sad state of affairs was to be found in the creation of a National Moslem University. Referring to female education the speaker said there could be no two opinions as to its desirability and that the question was how to do it.

The time had not yet come when education in schools could be safely imparted to Mahomedan girls. The speaker therefore advocated the training of orphan girls as teachers, who would act as visiting governesses in the Zenana. He expressed approval of the provision in the Aligarh College for the study of Arabic, but was of opinion that enough had not been done in this direction. He asked Mahomedans to pay greater attention to the thorough study of this language, in which would be found invaluable aids to the formation of character in students. In his concluding remarks the speaker emphasised the necessity for religious and moral education, which should not be neglected in favour of any merely materialist or agnostic teaching. Above all, he said, was it necessary that Mahomedans should remain Mahomedans, true to their faith and traditions. Without this any advance that they might make would be valueless. He uttered a note of warning to the authorities of M. A. O. College and begged them to protect the boarders against all unhealthy influences.

The speech was punctuated by cheers, the speaker being requested frequently to repeat and enlarge upon points he had made. At its conclusion he was warmly embraced by Nawab Vacar-ul-

Mulk, of Hyderabad fame, who had come from Amroha near Moradabad.

MOSLEM ALL-INDIA CONFEDERACY.

Inauguration At Dacca.

On the 30th December 1906, after the conclusion of the Educational Conference, a special meeting was called to discuss the formation of a Political Association for Mahomedans. The meeting began about two hours after the advertised time, but was most enthusiastic. The speeches were clear and forcible, a packed audience listening with the greatest attention. The debate was keen and every point was followed with interest. Nawab Mohsin-ul-Mulk made a graceful little speech, thanking the Nawab of Dacca for his splendid hospitality, the like of which he declared he had not experienced elsewhere, and expressed satisfaction at the spirit of enthusiasm shown by the people of the New Province, who, he had been told, before were backward, ignorant, stupid, and reckless, but who under the new conditions of freedom, were bound to go far and to fare well.

The Nawab of Dacca then requested Nawab Vicar-ul-Mulk to take the chair.

The President, who spoke in Urdu, in his introductory speech said that there was no need to enlarge upon the subject they had not to discuss. The time and circumstances made it necessary for Mahomedans to unite in an Association so as to make their voice heard above the din of other vociferous parties in India and, across the wide seas, in England. Unless united in support of one another and working in loyal unison with the Government of India, the Moslem majority, who through misfortunes and errors had fallen from their once high estate, were in danger of being submerged by the enormous Hindu flood. In education and politics all Moslems, old and young, were concerned, but the direct business of youth was education. It was not their business, while students, to make their voices heard in the political arena. In their immaturity and irresponsibility youths were to be discouraged as dangerous and heedless. When they acquired wisdom width of outlook, and sobriety, then their turn would come. As the young gentleman who had seconded the Nawab of Dacca's proposal that he should take the chair had said, youth was "too hot, too frothy;" therefore unless mature wisdom and experience guided their councils, they would be ineffective and even dangerous. The advantage and safety of every Mahomedan lay in loyalty to the Government, so much was their cause bound up with that of the British Raj. They must be prepared to fight and die for the Government if necessary. No one knew that they might not yet be called on to do so. The political outlook in India was full of peril at

the present moment the air was full of thunder and roaring. Mahomedans, whilst uniting and making their carefully-considered wants heard, must maintain a demeanour of sanity and courtesy. The more revolutionary tendencies, now rife in the country, should be condemned and discouraged by all. There was at the same time no need for unreasonable bitterness and hostility against other parties in safeguarding their cause and maintaining cordial relations with the Government, who had made and kept India what it was, a land of peace, of equity, of opportunity, and of freedom, and one where anarchy would ensue together with the final ruin of Mahomedans, if British rule were for an hour removed. The Mahomedans were doing a sacred duty. Their motto should be "defence" not "defiance." The Mahomedans were with Congress where the action of Congress was for the good of the public and the Empire, but they reprobated utterly all rapid and senseless opposition to the Government. The cause of Mahomedans was the cause of the British, and the sympathies of Government were with the Mahomedans. The Viceroy's reply to the Simla Deputation, the logical consequence of which was this meeting, was full of encouragement for Mahomedans. His friend, the Nawab of Dacca, would now explain the scheme which would greatly strengthen the Moslem position and at the same time prove of great assistance to the rulers of this country in the accomplishment of their splendid but onerous and delicate task.

Speech of the Nawab.

The Nawab of Dacca, rising, introduced his resolution in a lengthy speech. He said that special necessity existed for increased political activity among the Moslem community. All in touch with India and the Mahomedans felt a thrill of new life galvanising the community. India was on the eve of a new era. Mahomedans were awakening from coma and the movement was not a new one, but the turning point in the course, the result of the work of Sir Syed Ahmed. A new political movement had been forced on them. Had the party now in power in England been familiar with the position of the Moslems, had Indian public men represented justly the Moslem claims, the movement might perhaps not have been heard of, but quiet unobtrusive work was at a discount. Only those who cried loudest had a chance of being heard. Moslems, therefore, were forced against their own wishes to abandon their traditional policy in order to secure the easement of very real disabilities, and to avoid the danger of their interests being neglected—whilst other Indians benefited. There had been a time, when the formulation of such a political union as that now proposed would not have been unattended by some peril, and would have been inadvisable. When the community was uneducated, when passions were still unrestained, and a spirit of caution was lacking and loyalty was, in

places, undeveloped, the situation was delicate. Twenty years had wrought in a vast change. To-day the Government was convinced that Mahomedan fealty was a great asset. The *Times* had styled the Moslems as a force of loyalty in India, and one of the great assets of the Empire. The race, still warlike, saw what 50 years ago it was ignorant of, the advantage of a position under a just ruler and the restraints of lawful rule in the land. To-day it was prepared to enter on a political career as a community united, enlightened, loyal and law-abiding. The resolution was intended to secure the protection and the advancement of their political rights and interests without prejudice to their loyalty to the rulers and goodwill towards their Hindu neighbours. It was to be a moderate representation of their views to Government and so would be just and fair to other communities. Only after the Central League, as proposed, came into existence could Government find a representative to which it could turn to ascertain the view of the Moslems, and to which the Moslems could turn for consistent firm support, sensible sincere advice, and a true interpretation of the wishes of Government. The materials had long been ready only now they were able to rear a mighty and splendid fabric of a united people.

The resolution was then read and carried with acclamation after a short debate; one or two slight amendments being held over for consideration in Committee when the scheme will be finally shaped for submission to a representative meeting, which will be held probably at Lucknow at Easter. The Resolution was as follows:—"That this meeting, composed of Mussalmans from all parts of India assembled at Dacca, decides that a Political Association, styled the All-India Moslem League, be formed for the furtherance of the following objects:—(a) To promote among the Mussalmans of India feelings of loyalty to the British Government, and to remove any misconceptions 'that may arise as to the intentions of Government with regard to any of its measures.' (b) To protect and advance the political rights and interests of the Mussalmans of India and respectfully to represent their needs and aspirations to Government. (c) To prevent the rise among Mussalmans in India of any feelings of hostility towards other communities without prejudice to the other objects of the League."

The Resolution was seconded by Hakim Ajman Khan of Delhi and supported by a dozen speakers. A strong Provisional Committee, with power to add to its numbers, was then formed, having for Joint Secretaries the Nawabs Vicar-ul-Mulk and Mohsin-ul-Mulk. This is to frame a Constitution within 4 months, and is authorised to convene a representative meeting of Indian Moslems at a suitable time and place, and to place the Constitution before that body for final approval and adoption.

The following resolution was also adopted:—"That this meeting having in view the clear interests of the Mahomedans in Eastern Bengal, considers that the partition is sure to prove bene-

ficial to the community which constitutes the majority of its population, and that all such methods of agitation as boycotting should be firmly condemned and discouraged. It was also resolved that copies of the Resolution be sent to the Viceroy and Secretary of State.



The Indian Ladies' Conference.

The following is the Presidential Speech of Her Highness the Maharani of Baroda :—

Beloved Sisters,—You have done me great honor by asking me to preside at this Ladies' Conference. When the "Mahila Samiti" sent me an invitation to Baroda to preside at this meeting, my first idea was to decline the honour, as I know that there are many among you who are better qualified to preside than myself. But I felt that it was an act of kindness on your part to have sent me this invitation to the other end of India, and that it would be a poor response to your kindness if I refused your request. Therefore, dear sisters of Bengal, I have been persuaded to accept your invitation. And if I fail to discharge my duties with the ability which, I know, many of you possess, I must ask for your indulgence, as you are yourselves responsible for electing me your President !

And first let me tell you how glad and happy I feel to find myself once more among you. I have lately travelled much in distant lands,—in France and England, Italy and Greece, Germany, and Austria, Switzerland and America,—and I have been much interested in the arts and industries, and the social and educational institutions that I have seen. But I come with different feelings to you,—I come as a returned wanderer, as an exile taken back in his home again. For there is a bond of union which unites us and makes all India our home.

You received me kindly and lovingly, two years ago ; and I feel myself as much at home in Bengal as at Baroda,—among sisters engaged in the same work and endeavours,—daughters of the same beloved Motherland.

Your "Mahila Samiti" cherishes these sentiments. One of its principal objects is to unite Indian ladies of all creeds, castes and races. Our men are drawing closer together, year after year, by means of Congress and various Conferences, and though common aims, aspirations and endeavours. But I think in cementing the bonds of national union, we women of India, have an influence not less potent than that of men. We meet each other in our homes, we learn to know and respect and love each other within the walls of the Zenana, and we strengthen those ties which hold together a nation. For, although we may live a thousand miles apart, and although we may speak different languages, we are united by a bond of common sentiments and common endeavours. High or low, rich or poor, we are all

proud of the same traditions of the past, inspired by the same aspirations for the future, united by the same sentiments of affection and of love. It is a happy idea, therefore, which has led the "Mahila Samiti" to try and bring together ladies from all parts of India; the more we meet, the more we know each other, the better shall we succeed in our common work and endeavours.

Another object of the "Mahila Samiti" is to spread a knowledge of Indian literature and history; and in this respect also, I think, we, women have a degree of influence, perhaps, more far-reaching than that of men. We shape the minds of our children in their infancy and boyhood, we can inspire them with a love and a legitimate pride in our past history, and we can create in them a taste for our modern literatures. I believe there are gifted ladies in this advanced Province who have written works which will live in the literature of the land. But all of us,—who are without such high gifts—have the power to train our children in a love of their own history and literature; and believe me, the teaching of the nursery have a more lasting and durable influence through life than is generally supposed. The manhood and the womanhood of India is our handiwork; let us, mothers, train the future manhood and womanhood of India to the service of our country.

Lastly, to encourage the arts and industries of India is also one of the objects of the "Mahila Samiti," and I believe of this Conference, I know how the ladies of Bengal have helped and supported the Swadeshi movement which is now spreading fast over Northern India and the Punjab, over Gujrat and the Daccan, over Madras, Mysore, and Travancore, everywhere over this great continent.

From all parts of India we have watched with a wondering admiration this great movement which you have boldly started and nobly sustained, until all-India to-day is uniting in this great and patriotic endeavour. Indian stores are growing up, almost spontaneously, in every Province; mills are increasing in number in the great industrial towns of Western India; hand-loom have more than doubled in Bengal within the last two years; the use of Indian metalware and other articles of domestic use is rapidly extending. I am told that thousands of weavers and workers in metal, who had lost their vocations, are returning to their looms and their anvils; and that in many a village home, our poor sisters,—the mothers and wives and daughters of our poor artisans,—are feeling a new hope, and a new incitement to work. History, if it is a record of national progress, will record the wonderful tale of this great movement,—so recent, already so successful, and which the entire nation is so resolved to make durable and lasting. Let us, women of India, join whole-heartedly in this movement; and in the selection of articles for our daily and domestic use, in the

purchase of dress and ornaments for ourselves and our children, let us piously remember the claims of those tens of millions of poor Indian weavers and artisans whose suffering and poverty we have the power to remove. Wherever we may dwell in this vast country, whatever be our religious creed and profession in life, let us all unite in the common aim and endeavour to advance the progress and the prosperity of our country.

A new light is breaking on India with commencement of a new century. Let us all pray to that Great Being who can help the poor, and raise the lowly, that it may be the dawn of a long bright day for our beloved Motherland.

Indian National Social Conference.

The Presidential Address.

The following is the Address of Sir Chunder Madhub Ghose as President of the Social Conference :—

Ladies and Gentlemen,—I am extremely thankful to you for the honour you have done me by resolving that I should preside at the deliberations of this great assembly. When the request was first made to me that I should take the presidential chair here to-day, I was extremely doubtful whether I ought to accept this onerous, and difficult office ; and the reasons, and I may say the main reasons, were two-fold. First, I was not at all sure I was equal to the task, and secondly, being a member of the Hindu community of Bengal, I was not prepared to preside at a conference which had in previous years been accepting resolutions some of which the Hindu community at large would not accept, and it was not until after those resolutions were redrafted on the lines in which they might possibly be generally accepted by Hindus in this province as also by orthodox Hindu communities in other parts of India, and not until those resolutions were approved of by some of the leaders of the Conference, that I agreed to preside here to-day. The work which the Indian Social Conference has undertaken is gigantic, and at the same time most delicate. This arises from the habits of the people and the long-cherished customs of Hindu society—a society that for ten thousand years has out lived the onslaughts of various conquering nations. It would not do therefore to attempt the almost impossible task of pulling down altogether that ancient and dearly beloved structure for which millions of men and millions of women have sacrificed their lives without one thought of regret. But the intellect of the nation now has been thoroughly roused, and it is felt all round that those rules and ordinances which previously were adapted to the then existing circumstances cannot any longer be absolutely followed, and they require to be modified in such a manner as may suit the present conditions of society, the requirements of modern life, and the immediate environments around us. Those who think that we can work out the political regeneration of India and bring the whole of the people of India together and place them in a bond of unity in the present state of our social conditions are, I humbly think, living in a pleasant land of dreams. Just reflect for a moment. Taking the case of Bengal, with which I am more

familiar than the other Presidencies of this vast Peninsula, there are in Hindu society four main castes, and in each of these main castes there are so many sub-divisions. Nobody is making any endeavour to promote inter-marriages either between the sub-classes of the Brahmin community or between the other sub-classes of the Kayastha community. I need hardly say here that it is only by inter-marriage and inter-dining between the different sub-classes for the same community that one can possibly hope to promote sympathy amongst themselves and unite them in a bond of common unity. May I ask here some of our Bengal political leaders, who I see are present in this large assembly, how is it that, though they are in earnest and hope to bring about unity between all the peoples inhabiting this vast peninsula, they have not yet turned their mind to unite their own people? And do they seriously expect that they will succeed in their endeavour unless they unite their own people together in the first instance? One of the great objects that the Bengal Kayastha Sabha has in view is to curtail these extravagant marriage expenses and put down the extortionate demands that are made by the guardians of bridegrooms; but the endeavour of that Sabha has not, I am very sorry to say, yet succeeded, except to a very small extent. May I here again ask the Bengal political leaders whether they have made any honest endeavour to remove the canker that exists in their society in this respect. The most remarkable feature is that almost all our leaders bitterly complain of evils that exist, but when the time comes for action they never think of them but are too glad to get, when they have boys to marry, as much money as they can extort, and when they have girls, to give away, to get rid of them, by meeting such extortionate demands with great pangs and often with tears in their eyes. And this they have sometimes to do even by disposing of their own dwelling house. I seriously ask our political leaders here, do they seriously hope for national unity and national advance when they do not endeavour to bring about, among others, the fusion of the sub-castes of each community, the curtailment of the huge marriage expenses, the raising of the marriage age of boys and girls, the advancement of female education, and the removal of social obstacles in the way of re-admission of Hindus returning from foreign countries into their society. Gentlemen, in what I have just said I pray you should not misunderstand me I do not mean to deprecate the action of our political leaders. There are no doubt actuated by the best of motives, but what I do mean to say is that they should not spend the whole of their forces in political agitations, but should devote some portion at least of their thought, care and energy towards social improvements and in eradicating the evils that undoubtedly exist in our society. The work of a social reformer, I need hardly say here, is more real and more arduous in

the present condition of the country. I say more real and arduous because it depends on our own exertions and not on the actions of the Government. The members of Congress are not required to do any act individually in order to enable them to obtain political rights and privileges, but so far as social reform is concerned, it can only be achieved by individual actions of the members of the various communities which exist in this country. Here lies, to my mind the difference between the work of the Congress and of the Social Conference. I now pass to consider what may be the duty of the Social Conference. I have already indicated that some of the resolutions which had been passed in previous years by the Social Conference are unsuitable to the present social condition of Hindu society in Bengal at large and perhaps some other parts of India. So far as I have been able to ascertain, this province is conservative in many respects, and it seems to me that to insure success in the work of this Conference it is absolutely necessary to bear in mind the great importance of caution; for any false step, any hasty action may put back the desired progress indefinitely. There is much that is good, there is much that is precious and beneficial, in our social organization, and we must proceed cautiously and slowly. Hindu society is very slow to move. It is like a child which must be made to move step by step. If a few men belonging to Hindu Society were to run over, the rest of them would simply look at them with amazed wonder in their eyes, that is all. We must therefore take the mass of the community with us, so far as it may be possible. There is no good, as it seems to me, of passing resolutions which will be quite ignored by the mass. The resolutions, however, that will be laid before you in the course of this day have been so prepared as to meet with the latest resistance from Hindu society. I do not mean to say that there will be no resistance. There would undoubtedly be some, but I may be permitted to say that some of the members of orthodox Hindu society in Bengal who were consulted in the matter of these resolutions have remarked that there is nothing in them which any right-thinking man can take exception to. Of the various matters you will be asked to consider to-day the most important, to my mind, are the fusion of the sub-castes, the curtailment of marriage expenses, the advancement of female education, the sea-voyage movement, and the re-marriage of girl-widows. I have already shortly stated my views upon the importance of bringing about a closer communion between the different sub-divisions of each of the castes and the absolute necessity of curtailing the huge marriage expenses in this country. The next matter which demands a passing remark from me is in respect of female education. It is idle to deny that whatever female education there is in this country is owing mainly to the efforts of the Government. The time certainly has arrived when we should supple-

ment the efforts of Government in that direction. It seems to me that colleges for girls only benefit a very small class of our girls. Zenana teaching by Mission ladies, as it at present exists, is very unpopular. It is therefore absolutely necessary that a much larger number of schools should be established in different places, and that girls should be taught up to a certain standard before they are married, and that the attention of the Government and the people generally should be given to the education of grown up and married girls. Another matter upon which I desire to say a word or two is in connection with the sea-voyage movement. There are distinct sashtric texts allowing travels by sea to foreign countries for education, and it is a matter of history, nay it is admitted on all hands, that even up to the time of the Mahomedan conquest of this country the Hindus were a sea-faring people who colonized Java and whose ships periodically visited the shores of China and other countries for the purpose of commerce. I believe, gentlemen, if I am not mistaken, that it is only when the Hindus became a dependant nation that sea-voyages became obsolete, but for some years together voyage to England, America and other places for education is being revived and though students returning to this country, after their education in foreign countries are not generally admitted into Hindu society, yet, so far, as the town of Calcutta and neighbouring places as concerned in the present day, people returning from foreign lands are admitted in society if they only conform with practice as regards dress and living which are in vogue amongst Hindus, but it is not so in the mofussil. It is now, however, admitted on all hands, that we can make no progress in industrial pursuits without education and training in foreign countries. Vigorous action is being taken by the Association for the advancement of the scientific and industrial education of Indians, sending numerous students every year to foreign countries for industrial and scientific education. If these young men who have been sent to these foreign countries and others who are now going to these countries for education in other branches, when they come back to India, are received in Hindu society the problem will be solved by itself. It is remarkable that no question as to loss of caste is raised in respect to people coming to Ceylon, Aden and such other places for service. No such question was raised as regards the Hindu Regiments that went to Malta and China for service, and it seems to me that it is simply anomalous and inconsistent to think of raising any obstacles in the present day in the way of re-admission into society of Hindus undertaking voyage to foreign countries for education, commerce and other useful purposes. All that can be reasonably demanded of these men is that, having taken forbidden food while in foreign countries, they should perform the *prayaschitta* ceremony, but beyond this it would

not be reasonable to expect more from them. I pass on next to say a word about the remarriage of girl-widows. What the resolution on the subject aims at is the re-marriage of such girls as are married in name only and not widows generally. I have consulted with many of the orthodox people belonging to the Hindu society in Bengal, and I may confidently assert that the feeling seems to be almost universal that virgin-widows should be re-married, and it seems to me that if the feeling of the people in this respect is so general as I believe it to be, strenuous efforts should be made to promote the cause of remarriage of virgin-widows. Those gentlemen who will take an active part in such a cause will not earn, I am afraid, the popularity which political leaders win, but the great God who searches the hearts of men will certainly reward them for their kind efforts. What is really required in this direction is example, a few examples, and the thing is an accomplished fact. I hardly think it necessary to make any more observations upon the matters before you ; but gentlemen, you will permit me to say that it will not be enough for you to simply pass resolutions. It will be absolutely necessary for one and all of you to be in earnest in carrying out the resolutions into effect. One single example I need hardly say, is equal to a thousand resolutions simply put down on paper, and it devolves upon you therefore to promote the cause of this Conference by your own practical acts. Of theory we have had enough ; what we now really want is practice. One word more, and I have done. The main aim of the Indian Social Conference is to influence public opinion and to lay down generally the lines which reform should take, but the elevation of each section of the Indian community must be worked out by itself and by its own rules. While each section is doing its best to work out its own internal reforms, there should be no display of any hostile or aggressive attitude towards other sections, but rather there should be mutual sympathy and a strong spirit of co-operation and joint action, so far as it may be possible. I must also remind you, gentlemen, that the social conditions of the different provinces and of the different communities in each province are to some extent divergent, and the same line of action which may suit one may not be applicable to others. But what must be common to all is vigorous and well-sustained action by every member of each section ; not simply preaching what ought to be done but also by his individual example in carrying out the great object we all have in view. I wish further to impress upon you, gentlemen, not to be satisfied with simply a theoretical belief of what is right and proper, but to act up to the courage of your own convictions. It is idle to expect that in carrying out any reform you will meet with no opposition or carry the whole community with you all at once. On the contrary you should be prepared to encounter some amount of misunderstanding, possibly of some vituperation.

tion, but let me assure you, gentlemen, that, if the reform is in the right direction, all misunderstandings will gradually disappear, truth will prevail, and, with God's blessing, your honest efforts will be crowned with success.

Temperance Conference.



SITTING AT THE CONGRESS PANDAL.

Reference to Mr. Samuel Smith's Death.

The Temperance Conference met on Saturday in the forenoon, at the Congress Pandal, immediately after the sittings of the Congress were over.

Owing to the death of the Rt. Hon'ble Mr. Samuel Smith there was a pathetic solemnity attached to the proceedings.

Before the proceedings commenced the Hon'ble Mr. Gokhale, Mr. Malavia, and Babu Bipin Chandra Pal made touching references to the sad death of Mr. Samuel Smith.

Next Dr. J. Mann proposed that Mr. Gokhale to take the chair. He was seconded by Babu Kumud Nath Mullick. The proposal was carried. Mr. Jones, M. P. then read the speech which Mr. Samuel Smith was to have delivered as President. The speech read as follows:—

Ladies and Gentlemen, Delegates to the All-India Conference at Calcutta:—I offer you a hearty welcome as President of the Anglo-Indian Temperance Society. I had the honour of presiding two years ago at Bombay, and am glad to see that the Temperance Cause is taking hold of the finest minds of India. I have had 40 or 50 years experience of Temperance work in Great Britain. I have seen as much as any one of the ravages wrought by strong drink. Of all the evils that afflict Northern nations none is equal to this scourge of intemperance. In our wealthy England we have sections of the population sunk in deeper misery than ever you see in India. The same holds true of most Northern nations but I am glad to tell you that a great change in public sentiment has taken place in the last few years. The drinking habit has wonderfully gone down amid the better class of our people and though there are still drunken and debased classes in our large towns, the population as a whole is throwing off the dominion of this scourge.

It is our sad experience which makes us anxious that India should not become a victim to the drink-plague. The mass of your people are by conviction and religion total abstainers. See that you preserve that honorable pre-eminence in the future. I am grieved to learn that the drink habit has made far too rapid progress in certain parts of India. Among the richer classes there is a foolish passion to imitate the vices of Europeans and amongst the poorer classes, especially in factories and at plantations there is

a very marked spread of this pernicious habit. If ever India were to become addicted to strong drink as Northern nations are, the effect would be far more ruinous. Your climate makes drink tenfold more deadly than it is in cold climates. Men may go on using alcoholic beverages for a like-time in such a climate as ours at home without apparent injury to health; but this is impossible in India. The man or the woman who takes to drink in that climate rapidly goes down the hill. There is no middle course between abstinence and interference. The best proof of this is that distilled liquors are much more largely consumed in India than malt liquors. Most of the English consumption is of beer which contains only about ten per cent. of alcohol. In India the consumption runs chiefly on whiskey, gin, and country spirit containing 30 to 50 per cent. of alcohol and a great deal of fusel oil which is a poisonous ingredient leading to insanity.

The object of our Society is to combine all true bodies who wish the welfare of India in an attempt to arrest this plague. In doing so we have had to criticise from time to time the Abkari system. Most of you will remember that I assisted in carrying a motion in Parliament along with my friend, Mr. Caine, in the year 1889, condemning the outstill system of Bengal and the farming out of liquor to the highest bidder. The effect of that vote in the House of Commons was a despatch written to the Indian Government, which led to beneficial changes in system but they were not thorough enough, and we have had reason to criticise the action of the Abkari system for many years past.

We complained that it was too much in the hands of the Revenue Department. It is almost impossible for Revenue Officers to contract the consumption of that which supplies taxation. At all events there is a natural bias in favour of a full revenue. For that reason we always held that there should be some intermediate body to grant licenses or refuse them, who had no interest in the receipts. We have met this difficulty in England by entrusting the various duties to the magistrates of the various districts. We have often had reason to criticise them severely, but of late years there had been a marked improvement in the way in which they discharge their duties. They feel the impact of public opinion and public opinion is now strongly in favour of Temperance. Can we not find some such body in this country?

I think the experiment might be tried in some localities of leaving to local and municipal bodies the control of these dangerous traffic. Local opinion in India will usually be on the side of Temperance. Why should not some channel be found for its expression?

I am glad to know that the strenuous efforts of the Temperance Party in India have led to the appointment of a Committee to examine the Excise system. That Committee has recently presented its report. I have not had time to study it, but I am glad to

notice that it adopts some of our recommendations. It utterly condemns the Outstill System. It also condemns the selling of drink to children under 14 and the employment of barmaids. All India will heartily approve of these principles. I think it is the height of wickedness to permit children to intoxicate themselves to or contract the habit of drinking at all, and the whole sentiment of Eastern countries is opposed to women degrading themselves by standing at a drinking bar.

I think I will go further and say that all India would welcome the exclusion of women from drink-shops altogether. Terrible evils have arisen in Northern countries from women drinking in public houses. Experience proves that you may reclaim a drunken man but it is almost a miracle to reclaim a drunken woman. The finer and the tenderer nature sinks to a deeper degradation than the coarser nature of a man.

I am glad to think however that as yet women are very rarely in the drink-shops of India.

Our Society is equally interested in suppressing the traffic in intoxicating drugs. The temptation in the East lies more in the direction of drugs than of alcohol. Opium though grown in India is not generally used as it is in China. It has wrought awful havoc in that country and I am rejoiced to think that at last China is making an earnest effort to shake off that course, I wish her God-speed. I have protested for a life time against the opium trade. I know that this is the general feeling of India when all regard it as a stain upon the British name. It is true it will mean a loss of revenue ; but the land can be used for wholesomer and better products.

We attacked with success in Parliament the opium dens in India several years ago I believe these are now illegal but opium can still be got by public which is not the case in England where it is only allowed to be sold by a chemist and labelled "poison" and by a doctor's orders. It ought to be the same in this country. Even worse evils are wrought by the hemp drugs *bhang, ganja and hashish*. Their effects are maddening and I am told that many of the inmates of Lunatic Asylums have lost their reason through the use of these drugs. Even countries so backward as Turkey forbid the use of hashish. We claim from the Government that the sale of these deadly drugs be declared altogether illegal.

After the speech, the following resolutions were adopted :—

RES. I.

That this Conference, consisting of Delegates of Temperance Societies from all parts of India deplored the constant and continued increase in the consumption of intoxicating drinks and drugs in India. It desires to impress on the Government the urgent necessity for immediate action to check this growth of the drink habit. It is of opinion that no attempt to grapple with the problem will be successful while the Revenue authorities retain

the power to determine the number and location of licenses for the sale of intoxicants.

RES. II.

That this Conference is strongly of opinion that if the increase in the use of alcohol in India is to be checked the children in the schools throughout the country should be definitely taught the nature and effect of the use of alcoholic liquors. It therefore urges on the Educational authorities the introduction of compulsory instruction on this subject, as part of the syllabus in all primary, secondary and high schools.

RES. III.

That this Conference, whilst of opinion that the Government of India can do much to discourage drinking, yet believe that the moral sense of the community must also be alive to the evils attendant on the use of alcohol and the necessity for including principles of total abstinence. It therefore appeals to the Temperance Associations and all religious and social leaders to redouble their efforts in arousing the people among whom they work to secure a more enlightened public opinion on the subject throughout India.

After a vote of thanks to the chair proposed by Babu Surendranath Banerjea and seconded by Dr. Mann, the Conference separated.

**THE HON'BLE MR. P. RAMANADHAN,
K.C., C.M.G.**

FIRST LECTURE.

Lecture on Vedanta and Saiva Sidhanta.

On Saturday the 5th January 1907, evening, the Hon'ble Mr. P. Ramanadhan delivered a lecture on "Vedanta and Saiva Sidhanta" in Pachaiyappa's Hall before a very large and influential audience.

Justice Sir S. Subramania Aiyar, C.I.E., occupied the chair.

Opening Remarks.

The Chairman, in introducing the lecturer to the audience, said :—Ladies and Gentlemen,—The reputation of my friend, Mr. Ramanadhan, is so great that very few words are required from me in introducing him to you this evening. You all well know that he enjoys the unique possession of eminent culture of the West and the East. His knowledge and experience have been greatly added to by wide and studious travel in countries among the most advanced in the world. The grand reception which was accorded to him by the distinguished men in the United States during his recent sojourn there, is a matter about which, I am sure, we all feel very grateful. The ability which he brought to bear upon the difficult and interesting questions submitted to him in the course of his meeting with those distinguished men, must have produced on them an impression wholly favourable to the high view of the capacity of the *élite* of the Indians—I am sure Mr. Ramanadhan will excuse me when I refer to him as an Indian,—the impression which is produced, I am sure, cannot but tend to raise the general sympathy in that advancing great country for the people of this country. With these few remarks I shall ask Mr. Ramanadhan to deliver his discourse. I am sure we shall have to-day a feast of reason, and erudition with reference to this sublime subject.

Mr. Ramanadhan's Lecture.

The Hon'ble Mr. P. Ramanadhan next rose amidst deafening cheers and said that he was delighted to hear himself spoken of as an Indian. He was indeed a son of India, and his forefathers also considered themselves as the sons of India. His spirit had imbibed the spirit of India, and was true to the great ideals and practices of India, and that spirit must be properly recognised as a son of India. The Indians were one of the mightiest nations in the world. Whilst nations great in themselves had dis-

appeared like flies, they (the Indians) had continued not only from generation to generation, not only from century to century but from thousands and thousands of years ago. They had seen the rise and fall of the Assyrians, Carthaginians, the Greeks and the Romans and a variety of other nations, but the Indians had continued as a nation. Why was this, he would ask? Because they always worshipped the Supreme Easwara as more useful to them than running after the phantoms of the world. He who paid obeisance to Easwara as the mighty ruler in all love and mercy would always be protected by Easwara, come what might. Coming to the subject of the evening, the lecturer said that the subject chosen for that evening was one of great difficulty, namely, "Vedanta and Saiva Sidhanta." If he had not, in the course of this discourse, been able to raise in their minds a clear picture of what "Vedanta and Saiva Sidhanta" was and what it should not be, they would be pleased to remember the difficulties of his position and forgive him for having undertaken such a stupendous task. One great advantage in explaining this subject in English to an audience that seemed to be impregnated with English methods of thought and the ideals which prevail among the Western nations, was this, that he would be able to explain the subject by Western illustrations, and the subject would come out more clearly in their minds by referring to the conditions of the West. By this he meant that at present the materialistic condition among the Western nations was due to the absence of an exposition of a universe and the "Antaryami Easwara" and that owing to this, they found among the Western nations pictures of sensuous enjoyment and love of pleasures with all the attendant evils that arose from socialism, materialism, scepticism and all the other *isms* of the world, which proved so baneful to those beautiful countries. When he (the lecturer) went last year to America, he received an invitation from a Conference of Unitarians who represented the most advanced thinkers amongst the Christians in the United States of America. They numbered about two millions of people. They were sent out from each of the States in order to confer with one another as to the present position and future prospects of so vast a body. He (the lecturer) was invited to that Unitarian Conference in New York. He went there and found about 5,000 to 6,000 of the greatest men assembled in a gigantic hall day to day and speaking with all earnestness about their wants and wishes. One of their great prominent speakers, a Minister of a Church and a man of wide culture and sound education rose and spoke for a long time, and in the course of his speech he made a singular acknowledgment in the presence of a large number of visitors like him and other men from distant lands to give their greetings, and the confession that he had heard then with great pleasure was this, that the ministers of the Christian Church were not able to afford

satisfactory proof of the existence of God. This was the one problem, he said, that the Unitarians should decide upon. Now, every one from his fifth or sixth year would not be satisfied but wanted positive proof of the existence of God, and of the fact that he was the ruler of the Universe and was engaged in the curing of souls. The consequence of this scepticism was atheism, materialism and all the other *isms* they could find largely prevalent in every city on the other side of the Atlantic Ocean. There was no doubt the fear of God was not in the heart of man, but only on external show of fear for the sake of his fellow-men. In these circumstances, people in different walks of life,—when he said people, he meant the populace but not the cultured men of the country—were like hungry wolves seeking for sensuous pleasures and for a redistribution of the wealth of the country by lawful or unlawful means. A friend of his in New York told him that beautiful as New York was, that wealth as New York was, that armed as it was to the teeth, yet they did not know when this barbarian populace would inundate their beautiful cities, when these hungry wolves would attack the Government, pull it down and establish a new Government and make their own laws and redistribute the wealth of the country. How did all this come about? He would say that it was through a want of the knowledge of God. Save the Ministers of the Church, the populace had no fear of God, but there was fear of man which meant the fear of the strong man; and in consequence of this, the classes of people divided themselves as follows:—The vast majority of the populace lived according to the principle of “let us drink and be merry, for to-morrow we die,” and a small minority were acting by the principle “let us do our highest duty with the greatest comfort in the direction of the perfection of human thought and in the perfection of character.” These are very good lessons for them, and the point he wished to make was this, that wealthy as Europe was, that enterprising as Europe and America were, that beautiful in many respects as the countries in those places were, yet there were two big cancers in their midst, and they did not know the remedy for them, which were staring in their face. They did not know how to attain peace after they had engaged themselves strenuously. Their constitution were shattered after the work had been done and they were perfect wrecks. They had no consolation whatever. There was care in their eyes and sorrow in their hearts, and they moved about like ghosts not knowing whether in the past they had done right or wrong. All this was because they did not know the existence and the possibility of attaining the spiritual. The lecturer then referred to the conversation he had with the President of the Yale University, and said there were in that institution about five or six thousand students. The President said to him, “We have such eminent men in this country during the last one hundred years. We expect New York to be the commercial and revenue

centre of the world, and we expect to be the suppliers of most of the nations of the world. Commercially and politically we are going to be recognised as exemplars in this beautiful earth, but even though such are our achievements, we do not know how to make that principal achievement called the conquest of care and sorrow. Will you tell me as a man coming from India whether amongst your people this conquest has been made? We love our wives and the members of our family. We are also very energetic and persevering, but the moment our wives lay in bed and complain of this or that our heart fails. We are paralysed by death. We are sorrowful in the extreme. We are unfit to do our respective works in our respective spheres of life, we are perplexed and by perplexity our judgment is unbalanced. We don't know what to do. We get angry and fall into many moods, and I wish to know whether there is anything in 'his universe for the attainment of that end and the remedy that will root out for ever all this care and sorrow in the hearts." This was, the lecturer said, one of his conclusions, *viz.*, that the greatest nation in the modern times in the present world had not solved the problem of the conquest of care and sorrow. Here, the lecturer said that these were not his notions gathered from a study of the nations of the East and the West. Such a great authority as Mathew Arnold, one of the most cultured men in England, went further and said that the social and political activities of the West were carried on without a clue of some sound order and authority. He was of opinion that the work of politicians had created an anarchy of ideas, and the followers of culture were doing their best to obtain some public recognition of the duty and possibility of uplifting the spirit from ; this path of corruption. Now, it would be well for them to remember that with all the philosophy, science and culture which Western nations had with them they had confessed their inability to add to their happiness. There was no perfection of human character, nothing of the expansion which was demanded in their own people, the expansion of self-love into neighbourly-love. One of the Bishops of England wrote an article in the "Nineteenth Century" some twenty years ago that it was impossible to carry out the doctrines of Jesus, and if anybody had attempted it, it would be the surrender of England to the first enemy. Now remembering such to be the conditions of Europe and America, he (the lecturer) thought they would readily come to believe what their sages had said in their books, that "Vedanta" was the one study that would solve the problem of care and sorrow, and that the "Sidhanta" doctrine was exactly to the same effect, namely, that care, fear and sorrow might be triumphed over by learning the principles set forth so elaborately by the sages in these two statements of doctrine, called "Vedanta and Saiva Sidhanta." It was often thought that the reading of "Vedanta and Saiva Sidhanta" was time wasted, and it was often asked, what was the practical value of the study of "Saiva Sidhanta or Vedanta."

The answer to that was that it was the most important of all practical studies, namely, the conquest of care and sorrow. But, of course, the study was a very difficult one. It was not intelligible to most people except to those who had passed from the stage of self-love to neighbourly-love and were ready to ascend higher. They all knew what the growth of the body was by the marks that the body manifested, but few of us knew that there was a spirit within, and there was a growth of the spirit just as much as there was a growth of the body. The growth of the spirit thus spoken of was "Atma," or "Aham," or love, because "Atma," "Aham," and love were all three different names to the "Atma." Very few of them knew that this "Atma" or love had its "Ashrama" or residing ground in the senses, and few of us knew that the second "Ashrama" for the "Atma" or love was "Budhi," reason or intellect, and still further very few of us knew that transcending these "Ashramas" the soul finds its "Ashrama" in its own home. Then, it was indeed full grown. That is to say self-love in the infancy of the spirit, neighbourly-love in its second stage and philanthropy in its third stage, i.e., complete self-denial and the recognition of the fact that there was no difference whatever between one "Atma" and another. Such a man who had passed through these several stages would be said to have attained "Atmapurnam." What the "Vedanta and Saiva Sidhanta" sages said was that it was a positive fact that every cultured man grown in the spirit, would be able to realise that the spirit grew and that the spirit when it attained its full maturity, would be able to release itself from care and sorrow. A philanthropic man necessarily felt less care and sorrow than a man with a neighbourly-love, and the man who had a neighbourly-feeling would have greater happiness than that of a self-lover, but the self-lover, was a very miserable man indeed. Amongst them might be found men who regarded that man as a friend who gave him presents. That was the rule of conduct in the case of a self-lover, but the man possessing neighbourly-love would say, "I shall not receive presents but I shall give what I can to others." A philanthropic man would never give presents to anybody from whom he might expect a return. He did not want the possibility of a return, and therefore all his efforts would be to give his wealth away to such people who could not return the blessings, because he knew, as a matter of fact, that Easwara was the benefactor. This "Vedanta and Saiva Sidhanta" doctrine presented to them most clearly the undoubted fact that there was spirit within them, and it was possible for man to grow in his own spirit from stage to stage even as they could grow a vegetable or animal by giving it proper food and attention during proper time. It must not be supposed that "Vedanta and Saiva Sidhanta" were not founded upon actual experience of the spirit. It was the indestructible ground upon which it stands. It was the realisation of the "Atma," the "Atmadarsana" which enabled the *Jeevatma* of India to speak with

so much authority. Their civilisation was a sage-made-civilisation, not by people, and therefore, when he saw a man who attempted to treat lightly of the civilisation of India and to forget those benefactors who had come to their help, his heart became saddened, and he would ask them how long they were going to continue in this state of things. In conclusion, he asked his hearers to rise from their lethargy and realise the importance of the study of "Vedanta and Saiva Sidhanta." If they continued in the same state, they would get into all those political and social evils which were now threatening the Western nations. The remedy for the corrupt state in which men were now placed was the intimacy with the Divine Being. Unless they cultivated that feeling they would sink deep and deep in the mire of corruption from which it was difficult for them to escape.

The Chairman's Remarks.

The Chairman, in bringing the lecture to a close said that his first duty was to convey their most grateful thanks to Mr. Ramadnan for the exceedingly able and eloquent discourse on the great subject of "Vedanta and Saiva Sidhanta." For his part none could feel too indebted to him for the affirmation which he had so emphatically made of the existence of the spirit and the existence of a part in man which was deific and the possibility of knowing it.

It would require much time if one attempted to dwell on the numerous passages affirming this in the most undoubted terms. The "Bhagavad Gita" which was now in the hands of every school-boy might be appealed to on the point. He (the Chairman) would refer to that phrase in the eighth chapter where the phrase opened with the word 'Rajavidya' and when the Lord described the magnificence which he was going to convey to his pupil Arjuna. It was the most purifying process of knowledge. What was laid down was the performance of *Yagna*. It was, as it were in which contradistinction to that affirmation that that phrase laid down that this knowledge was capable of being directly experienced in the body. He therefore wished to add his own word in support of it that the knowledge which was capable of being acquired by every man by due effort was knowledge experienceable in the body, and therefore every one ought to try to acquire that knowledge. They (the Indians) were in fact the inheritors of the wisdom of the great sages as also the heirs to the European modern civilisation which had merits and demerits of its own. They should try to assimilate the great principles of the West with the great lessons given by the old sages. To the extent they were able to fulfil the responsibilities of these two laws will be as it were the extent they would have fulfilled their obligations. Educated men of this country were already beginning to depart from the main attitude which at one time was theirs. He would, therefore, say that the proper

attitude of every man who approached this subject must be reverence for the great teachings and on the other hand every subject should be approached with the spirit of investigation, with that scientific grasp which was the greatest merit of Western methods. If this was done he (the Chairman) had not the slightest doubt that the generations which were to come hereafter would present examples of a civilisation which will be found greater than any civilisation hitherto found on the face of the world. He believed that evolution always took place, and every subsequent evolution was higher than the immediately preceding one. In conclusion, the Chairman conveyed on behalf of the citizens of Madras a hearty vote of thanks to the lecturer for the very able, eloquent and stirring address which he had delivered that evening.

With a vote of thanks and with the usual presentation of garlands, the meeting terminated.

SECOND LECTURE.

The Uplifting of the Soul.

Last evening, an even larger meeting was held in Pachaiappa's Hall when the Hon'ble Mr. P. Ramanadhan delivered a lecture on the "Uplifting of the Soul," when Professor M. Ranga Charriar presided.

Opening Remarks.

The Chairman, in opening the proceedings of the meeting, said :—Gentlemen, Yesterday before most of you had heard Mr. Ramanadhan you had known him only by reputation, and now you know him better. He told us yesterday, and Sir S. Subramania Aiyar agreed with him, that the best test of truth is personal realization, and in the way of that personal realization you have had enough from Mr. Ramanadhan to enable you to appreciate him properly; and from my own personal realization of what it was that I had last evening I feel that I ought not to detain you longer, and call upon Mr. Ramanadhan to deliver his address on "The Uplifting of the Soul."

Mr. Ramanadhan's Lecture.

Mr. Ramanadhan delivered his address partly in Tamil and partly in English, in the course of which he said that Jesus and St. Paul preached the same doctrine which "Vedanta and Saiva Sidhanta" taught, viz., "Let not the spirit come into the bondage of corruption." What is meant by corruption? It is *malam*. What is *malam*? It is the thing that spoils. Spoils what—is the next question. It spoils everything. Take the mineral kingdom, take the vegetable kingdom, the animal kingdom and the moral kingdom. If it gets in there, it is sure to work ruin and corruption there. Now let us take the mineral kingdom as exemplified by metals such as

iron, copper, silver, gold and such and you will find this *malam* doing its work of ruin in the form of rust. You clean your iron, or copper or gold as hard as you can, make it appear quite brilliant and put it aside for one or two days. You will find rust on it. Nobody knows how it comes. In the vegetable kingdom it appears as mould. That is the work of *malam*. The work of this corrupt thing in the animal kingdom is seen to be *putridity*. If you make an incision in a man's arm and keep it open, you will find a stinking thing oozing out, and persons who are disposed to kiss dainty hands of maidens and children would hesitate to adopt that form of respect to this perishable article. That is how *malam* works in the animal kingdom. Then, let us go to the mental kingdom. There it appears as hate in its two forms of *Raga* and *Dvesha*, likes and dislikes. You see apparently rust is different from mould, mould is different from *putridity* and *putridity* is different from like and dislike. But if you want a comprehensive term to include that which spoils everything you cannot fix upon a better term than *malam*. The term *avidya* should be interpreted in the *Vedanta* in this manner. In the most comprehensive sense, the term *avidya* means that which spoils everything in mineral, vegetable, animal and the mental kingdoms. This *malam* is an invisible thing. It is in its *sukshma* state, altogether invisible. There are what are called *Karana Swarupa* of *Malam* and the *Karya Swarupa* of *Malam*. The former is invisible, but the latter manifests itself in many ways to the eyes and to the mind as well. The description is sufficient for the purpose of understanding its *Karya rupas*. I think a little more may be said about *malam*. It is that which causes mistake in the minds of persons. For instance, a person sees a rope and mistakes it for a snake. Then he is presently in a state of tremor, and he bolts out. What is it that did this but this mould? So *Jeevatmas* confound the body with the spirit, confound sorrow with joy and the spirit with the world. This is all the work of *malam*. Again it always projects itself into twos and threes by a system of differentiation. So you will find the whole universe is full of splits, bifurcations and differentiations. The lecturer here exemplified how the system of bifurcation takes place. First of all, there is the seed. The seed splits and out of it comes forth the trunk of a tree. That splits, then you will find two main trunks. That splits and so on you get the other branches of the tree and the roots. In the same way we find in the other kingdoms, whether it be mineral kingdom, animal kingdom or the mental kingdom, everywhere you will find this thing which spoils everything, which cannot unify but always differentiate, causes cleavage. You cannot examine one atom in the universe without splitting in this manner. This tendency manifests itself in the mind as likes and dislikes. One man says I like this thing and another man says I dislike it, and these two people think they are enemies of each other. This *malam* standing inside manifests itself in this way. You may also be astonished

to hear that anger is another manifestation of this *malam*, a thing that is not known to psychologists in the West. You will find in the Bhagavat Gita, the Bhagavan says : ' Oh, Arjuna, when one's likes or dislikes are opposed, this *malam* manifests itself as anger in the form of red eyes, heat in the system, strong breathing, froth in the mouth and so on.' Here the lecturer exemplified by stating how, water running smoothly, if obstructed forms froth in the flowing current. This experiment is one of frequent observation, and, therefore, you readily believe that froth is nothing but water, only it has changed its form. But anger in English is used in a justifiable sense as well as in an unjustifiable sense. They speak of virtuous indignation. That is confusion again. A true *gnani* does not get angry. He raises his voice and speaks to the offender without any of the usual manifestations of anger in him. His heart is full of love. His words are as sweet as ever. Only they are authoritative, directory and sometimes dictatorial, and he may become punitive in no time. But Easwara is the rewarder and punisher of everybody. *Krodha*, *kopam* are real manifestations of this *avidya* or *malam*. Anger also manifests itself in the form of flippancy. The name given to this in St. John is darkness, because it does not allow the *Atma* to see. Now, take a light in your hand and go in search of darkness. Where is darkness? A *Jeevanmukta* is *atmaswarupa*. He is not *anatma* who stands isolate because of the great glory of *Sachidananda*. He does not see darkness. He therefore assures you that it is *poiporul* which appears as *maiporul*. That is the definition of *prakruti* which in the Vedanta Shastras is spoken of as *avidya*. There is no difference between the exposition of the *Saiva sūhanta* and the Vedanta. The Western scientists and the Eastern sages teach the same doctrine. You take a microscope and apply it to a canvas picture. You will find that everything is standing separate from the other. That this *akasa* is the basis upon which atoms are put together, and if you further examine each of these atoms under the microscope, you will find each atom as it was has changed itself the next second. It is a quick sand-back which is altering its form. Now, then you see it is all the work of *malam*. It is important to know this because it is ever changing; it is false and fictitious. It is posing as true that which is not true. This thing must be learnt because we are in bondage to it. It is constantly creating trouble and sorrow. A man who is in bondage to this *malam* that spoils the beauty of the *atma* is a man who has been robbed of his personality, namely, his *chitta swarupam* and *ananda swarupam*, because this *Satchidananda porul* somehow came into the bondage of this *malam*. It lost its prestine purity and blessedness and became *antiya jada* and *dhukka*, that is the fall of the soul. This is its first birth.

To restore the fallen soul to *Sivaswarupam* is the second birth. Now, the merciful providence seeing the fallen state of the *atma*, it is said in the Bhagavat Gita, placed his *beejum* in the *Prakruti*.

What is this *beejum* but *beejum* of light and power in the proper sense of the term. His light is illuminating life. His power he placed in this very *prakruti*. It contains in its grasp the fallen souls. In the Vedanta Shastra, it is said that before the creation or evolution came into existence, the state of *jeevatmas* in *Prakruti* was like gold dust in a ball of wax. It is a thing of darkness holding everything in its grasp. *Prakruti* holds the fallen souls within it like a ball of wax holding these fallen *Jeevatmas* like gold dust. Now, the exposition in the Vedanta as well as in the Upanishads is this that the Lord placed his *beejum* in *Prakruti*. Then this hard and dark substance began to melt. It was chaotic. There was nothing like order in it. Then, Bhagavan in another part, says: 'Now, I am the author of the *gnana vibhaga*.' Then the whole thing begins to divide itself into three things by his own *atma*. I melted and the dirty thing began to be on one side and on the other the *Tamas guna*, *Rajo guna* and the *Satwa guna*. Were it not for the placing of Paramasiva's *beeja* in *Prakruti*, it could not have become the beautiful thing that it looks now to us. It is this *beejum* of illumination and orderliness which belongs to Easwara that makes the world so beautiful to our eyes and understanding. Bhagavan says, "if you want to comprehend my *Satchidānanda Swarupam* you must rise to my position by means of *Prakruti*." Bhagavan says, 'contemplate me as pervading the universe, after which you may be able to divulge yourself from that form of worship and rise to that higher form of worship which is known as worship in truth and spirit.' You see then, Arjuna who heard this exposition of pervasion throughout the universe and of this *Satchidānanda porul* in *Prakruti* says, 'Oh, Lord, I know why you said I am so and so, because you pervade everything! It is a mistake to suppose that Paramasiva is *Prakruti*. You must transcend all these *gunas* and pass on if you wish to succeed in your *yoga*. I know the common opinion is *Prakruti* is also Brahma, but that is not so, because you must once for all lay to heart that *Poiporul* cannot be *Maiporul* or *vice versa*. Bhagavan placed his *beejum* in this *Poiporul* with its thousands of orderly systems and of the 14 lokas, together with this *Misrabhumi*. He gave us not merely this earth for our work of emancipating ourselves from the bondage in which we find ourselves, but he gave us our *sukshma sarira* to consisting of five senses, the 5 *antakarmas*, the five *vayus* and the 5 instruments of action. Bhagavan gave us this body and told us 'your *Karana sarira* is *avidya*. Out of this, I have created *Sukshma Sarira* and into that there is my own divine element, and you better rise from your sleep and then go forth into the world, and if you perform the duties which I have enunciated for you in the Dharma Shastras, you will find emancipation by gentle means.' Bhagavan rules the universe by a system of indulgence. Take for instance the case of a man hugging his harlot to the horror of his wife and family. Bhagavan does not tear him off suddenly. The

man himself will in the end find that all this enjoyment does no good. He will himself pass to a state of emancipation or attain *moksha*. That is the scheme of creation. Out of this *prakruti* came Bhagavan. Out of this *Poiporul* came *karmendriya*, and the Lord himself was within, urging us forward to himself like a mass of living matter. This is the first step in the uplifting of the spirit. This must be done by obeying the Dharma Shastras, and it is by the help of the Dharma Shastras that each spirit has to lift itself higher and higher. Bhagavan says all your work must be devoted for the maintenance of this body that passes away. Now, after you have learnt, this work a little, to keep the body and soul together begin the work of *Karmanushthanam*, which as explained in the Vedanta and Sidhanta, *Yagna, Danam and Tapas*. That is to say, you are enjoined to put ourselves in constant relation with any specific deity whom we may be pleased to invoke, no matter what the deity you invoke may be, provided it is not the devil. Then go on making your *murti*. Don't you run wild. Your mind must be made to rest on one *Murti*, one *Stalam*, one *Teertam*. That ought to be in your lips. Then the mind becomes steady. Unless you put yourselves in relation with *Satchidananda Swarupam*, Easwara, which is entirely spiritual, you cannot escape from corruption. Our books say, we must have a temple of our own and meditate on the deity, and Bhagavan says, 'I, the supreme ruler of the Universe, have enacted this law that should any person appeal to the *Devatas* for help, he is bound to look after the man who does such worship.' If he does not do it, it will be trouble for the *Devata* himself. You see, brethren, such an order is put before you, and those of you who are not able to grasp the great infinite supreme Easwara on account of the limitations of your mind, must make up your mind to do this substituted worship to the *Devatas* with limited powers, with a form and with a name: and the *Gnana Mantra* tells you that the deity exists in your mind and then you must contemplate him from day to day and earnestly establish a relation between yourself and that beneficent. Then you attain *Moksha*. Such are the rewards of emancipation which we learn from "Vedanta and Saiva Sidhanta," and I pray that you will attain in due course this blessed state, and that you will be active ministers in the great work before us, namely, the regeneration of India in its true sense.

With a few remarks from the Chairman and with the usual vote of thanks, the proceedings concluded.

A Conversazione at the South Indian Association.

A *conversazione* was held at the Ranade Library, at 8 A.M., on Sunday, the 6th January 1907, at which the Honorable Mr. P. Ramanadhan, K.C., C.M.G., Solicitor-General of Ceylon, was present. Among the others, who were present on the occasion to meet the distinguished guest were the Honorable Justice Sir S. Subramania Iyer, K.C.L.E., the Honorable Mr. L. A. Govinda Raghava Iyer,

Messrs. P. R. Sundra Iyer, V. Krishnaswami Aiyer, B. Hanumantha Rao, P. S. Ganapati Iyer, H. Bhimasena Rao and M. Ramachandrayya. Taking advantage of the presence of such a distinguished man, the members of the South Indian Association invited him to express his views on certain important questions which are now occupying the public mind in India. The first question that was put to the Hon. Mr. P. Ramanadhan was how the Indian people could work out the material development of their country consistently with the spiritual ideal which Mr. Ramanadhan set forth in his lecture at the Pachaiyappa's Hall on Saturday. He said that material development really meant production of wealth. All professions were supposed to be aids to the making of money. The most successful man in the race for wealth was the man who profited most. This naturally suggested the idea of competition, which really meant a vehement desire on the part of every one to join the race. He has seen several countries of the West and has found that competition as it was understood and practised in those countries was not a good principle; it was a horrowing principle. The people who were engaged in the struggle were actuated with thoughts of self-aggrandisement which was not in keeping with neighbourly-love. The weakest went to the wall. The man who had the power always used it cruelly.

The artizans were once very happy. Each one had his allotted share of work and knew what income he would get. After the advent of steam engines the labourers and artizans could not work in their houses as before, but in factors and workshops under the orders of employers who were not always sympathetic to the workmen, and whose methods were not calculated to bring forth the best traits, intellectual and moral of the workman. The interests of the employers were entirely different from those of the artizans. These conditions brought a train of evils; the problem has been how to overcome these evils. The Indians have lived happily so long without caring for competition as it was understood in the West. They were actuated by *Dharma*. The workman in India was satisfied if he got the price of the material and of his labour with a fair margin for interest on capital. This he (Mr. Ramanadhan) understood was commercial enterprise without competition. European competition was all very well for people who knew nothing of a future life and whose motto was "Eat, drink and be merry." The Indian knew that life did not end here but that it passed on from birth to birth and that there was a God above. People impressed with these ideas would not be guided by the rule of competition which to them was an "*Asura*" thought and not "*Devatha*" thought. He thought that the making of money was absolutely necessary for the comfort of the individual as well as of the nation. A man without money could not be helpful to himself or to others. But money must be made with the most lawful means possible. The spiritual ideal set forth by the Rishis must be maintained. If

wealth could be obtained in accordance with that ideal, the people of this country would have got true material development. The people of India were once rich, but their wealth had been destroyed by circumstances which happened within the last thousand years.

Their duty now was to retrieve their lost possession and to build up their material prosperity, not losing sight of the spiritual ideal. Mr. Ramanadhan was then asked to give an idea of the lines on which education in India and Ceylon proceeded as compared with education in America and in Europe, with special reference to originality and faculty of research. He said that original thinkers in America and Europe were the fewest of the few. In America there was ample provision made by the State for original research. They had post-graduates who were invited by the Universities to prosecute their studies beyond the M. A. Degree. All conveniences were provided for them. There were no such institutions either in India or Ceylon. They had a technical school in Ceylon in which technical instruction of some kind was given with a view to train the hand and the eye. In India and Ceylon there were no facilities afforded either by the Government or by the people for the cultivation of originality or the expansion of research.

The next question that was asked was, on what lines female education should proceed in India, having regard to the Hindu ideals of womanhood. The old Hindu ideals had been shattered in the case of those who had come under the influence of Western education. They had not to go abroad for ideals of womanhood. To make the modern Indian girls the true representatives of their sisters in the past, they must be given a thoroughly good education in the Hindu Shastras. Dharma Shastras to begin with. Also Puranas. The value of Puranas and the Itihasas could not be too highly estimated. This was also a duty on the part of the educated Hindu who wanted to marry and to bring up a family. The University Students ought to be made to take greater interest in the ancient civilization of this land. Instead of imitating the Westerns in the production of novels, the graduates should render in popular language the teachings of the Ramayana and the Mahabharata. Some English works should also be placed in the hands of the young girls of India but the books must be very select. There was a further advantage in the young women of India being brought into contact with the finest and the best specimens of European womanhood. He was not speaking of the fashionable ladies of society, the tailor-made ladies. He had met in Europe and in America some ladies who might be reckoned among the highest ideals of Indian womanhood. His wife and daughter who accompanied him in his Western tours had derived great benefit by coming into contact with such women of the West. He was sure that Indian girls trained on the lines indicated above would substantially improve in the course of a decade.

Mr. Ramanadhan was next asked to express his views as to how the free and compulsory education of the masses had been solved in the Western countries and whether the system could be successfully introduced into this country. Mr. Ramanadhan said he had visited several free schools in America and was much struck at the lavish expenditure of money on them by the State. America was far ahead of England in this respect, in fact in matters educational generally. There should be compulsory education of the masses, if possible, they had no such education in Ceylon. But they had what might be termed "Grama Sabhas" in Ceylon. These Sabhas were under Government control. They had the power of making bye-laws, and according to one of the bye-laws framed by them, parents who were able to send their boys to schools, were required to do so, unless satisfactory explanation was offered for not doing it. He then explained the nature and the amount of education that should be given to the masses.

Asked as to what were the lines on which legislation was carried on in Ceylon having regard especially to the status and privileges of non-official members, Mr. Ramanadhan said that the privileges of non-official members were greater in Ceylon than here; they had greater powers in regard to the sanctioning of the Budget estimates, the Governor and the Executive Council had to get the sanction of the Legislative Council for the Budget estimates. It was open to any non-official member to oppose any provision or any item in the Budget although he might be overruled by reason of the larger number of the official members. If all the non-official members stand *en bloc* on any particular measure the executive generally yields. The state of things in India appeared to be, however, different.

The people of Ceylon had by constant contact with European broken the distance between the Europeans and the nations of the soil; the feeling between the two classes of people was one of equality, and no official member of the Council would think of giving offence to a non-official member, as sometimes happens in the Madras Presidency. Mr. Ramanadhan then described the origin of legislation in Ceylon, how Government Agents who stood in the position of Collectors, when they toured within their districts observed defects, which, in their opinion, should be remedied by means of legislation, suggested improvements to the Governor, how, when a number of Government Agents referred to similar defects in the administration a *darbar* of Collectors was held with the Governor in the chair and the lines on which legislation should be initiated finally decided upon. The proceedings of these *darbars* were in theory open to the inspection of non-official members, but with an unreasonable Governor or an unreasonable Colonial Secretary, it might be different.

Mr. Ramanadhan then offered useful and interesting remarks on the question of Social intercourse between Europeans and Natives

and on the lines on which an association formed for the purpose should work. The first requisite for the existence of amity between the two classes of people was, that the educated people of India should freely go to European countries and observe the customs and manners of the middle class people there. The Europeans hated cringing, fawning and flattery. No lady or gentleman would like an Indian for that. The people of India must familiarise themselves with the outward rules of European society, their dress, appearances, manners, etc. Europeans liked a man who had got a manful behaviour and at the same time was able to express himself respectfully. An Indian had first to study the moods of the people whom he desired to meet. Only the fewest of the few of the gentlemen of Europe or America came to India. The competitive tests for the recruitment of services in India and Ceylon had given the two countries all sorts of men, sons of brewers, shoemakers, etc. An Englishman of the intellectual sort was a sight worth seeing. Most people who came to this country were, he regretted to say, not of that sort and that was the reason why some of them were pleased with fawning and cringing and had no proper appreciation of a manful behaviour. That created a great demoralisation in the country. In Ceylon, an European was just like an Indian without any undue deference being shown him. The complaint in India was that officials did not treat Indians properly. He, however, regretted to observe that Indians were to a certain extent also responsible. Twenty years ago an Indian who went to England for study or for trade was lionised. Now things were somewhat different. Recently a petition was presented to the Benchers of the Middle Temple to exclude students from India. The authorities of the Middle Temple were mostly sons of gentlemen and nothing was done on the memorial. But it showed the tendency of the times. No Indian could get on with Europeans unless he studied their manners. The prejudice against Indians has been somewhat violent of recent years. Europeans who had visited India and Ceylon had brought very bad accounts of Indian students there. This feeling was growing more and more owing to a misunderstanding between the two people. There was greater manliness among the educated men of Ceylon and there was consequently mutual respect for both the classes of people in Europeans and Indians. Indians do not go to European clubs in Ceylon, nor are they usually invited. They were occasionally invited. Indians did not make it an honor to be associated in European clubs. In the Colleges, Law Courts, and on the platform they were all equal exactly as the Brahmins and the non-Brahmins were on this side of India. Every one knew there was no inter-dining between the Brahmins and the non-Brahmins, but they had their social amenities. Associations formed for improving the relations between the two people would draw them together. The Indians must first draw the most sympathetic among the Europeans, and others

would follow. There was, however, a danger in unlimited intercourse which must be guarded against.

The Honorable Justice Sir S. Subramania Iyer, K. C. I. E., an Honorary member of the South Indian Association, then thanked Mr. Ramanadhan for having kindly met the members of the Association and for the interesting and suggestive observations he had made on various subjects. In doing so, he said that the lethargy of the masses must be shaken and activity must be had on the right lines. The elevation of this country depended a "tam-sik" tendencies of the people being shaken off by means of education. In educating the masses, the results experienced in the Western countries should be borne in mind and guarded against. There must be produced in Indian society the three aspects of *satva*, *tamas* and *rajas*, *gunas*, and the masses stimulated and educated in a way which would prevent them becoming brutish. The first principles of the ancient Hindu Philosophy should be not lost sight of India's material prosperity depended on industrial development, but first the people must take care of the home and the cottage industries of the people, such as by providing hand-looms of the right sort to the rural weavers, not by starting huge mills at once. The circumstance of their being under the suzerainty of England, should be utilised by the people in educating the masses, and he had no doubt they would be fit for self-government in course of time.

An Interview.

The Hon'ble Mr. P. Ramanadhan, K.C., C.M.G., late Solicitor-General, Ceylon, of whose recent tour in America accounts have appeared from time to time in our columns, is just now in Madras. As one of the most important and leading citizens in the Island of Ceylon, and as one of the profoundest thinkers of the time, Mr. Ramanadhan has been warmly welcomed throughout Southern India. Taking advantage of his stay in Madras, a representative of the *Hindu* called on him for a few minutes' interview, which he very kindly granted.

As soon as our representative was shown in Mr. Ramanadhan accosted him in truly oriental style. Mr. Ramanadhan is a tall and stately personage and the cordiality and urbanity of his demeanour is noticeable at the outset.

"What can I do for you? What do you want me to tell you about my American tour," he inquired.

"Your American lectures as they appeared in our paper were widely read and appreciated and we here are naturally anxious to know some more of your American experiences, notably in regard to its political and commercial life of which so much is heard now-a-days," said the representative.

"My work in America," said Mr. Ramanadhan, "was mostly confined to things spiritual. I undertook the tour at the invitation of some friends who were deeply interested in the spiritual

development of man. I did not, therefore, concern myself with America's political excitement or commercial strife."

"As one who should know the spiritual and religious tendencies of the Americans, may I know," asked our representative, "whether you consider the corruption of the political and commercial life of America, in any sense reflects the attitude of all men there, and whether the generality of Americans have declined than in other Western countries."

"I do not think so," he replied, "I think the corruption and depravity attributed to the Americans are due to their habit of openly renouncing in the newspapers those whom they think are guilty of them. The Bishop of New York told the English during his recent visit to England, 'we wash our dirty linen in public,' but you wear them dirty as they are, or fear to touch them. Party politics and competition in trade have created a good many evils in Western countries, but there are many sober, earnest and serious-minded men in America who are unaffected by these tendencies and who are anxious to rectify things in the political and commercial world. President Roosevelt is the best type of this class. The evil of the political and commercial strife is that the people are too ready to misjudge motives and to impute private reasons for public actions."

"When you went to England, you took part in a debate on Mr. Gokhale's paper regarding self-Government for India, and I believe you said that though we in India must develop into a nation, our people are not yet fit to be entrusted with powers of self-Government. Do you hold this view absolutely?" asked our representative.

"Frankly, I may tell you," Mr. Ramanadhan said "my observation and study of popular Governments of the West do not impel me to believe that the policy of 'one man, one vote' if adopted in India, would be an unmixed blessing to India. The grave social and economic difficulties, the conflict of labour and capital, from which Western communities are suffering as a result of the introduction of Democratic Government, are likely to be reproduced in this country, if similar powers of voting were given to the masses. In Europe and America, the most thoughtful and cultured people feel themselves to be at the mercy of the masses. To my mind, it appears that if the masses are not educated enough to rule their own lives, they cannot be considered fit to rule the lives of others. Having conceded to the people free suffrage, the political organisation of the West is hard at work endeavouring to minimise the evil effects of the democratic principle by Caucus arrangements."

"But do you think that the present Government of India by a foreign bureaucracy should be a stable and permanent condition of things in India," he was asked.

"Oh no, I don't say at all," he said, "but I am against a complete democracy being established in India. Some system

should be devised, by which the intelligent and educated people of the country should have a voice in Government, and not the masses directly. It is obvious that the masses, as the less educated and less intelligent portion of the community, should always be subject to men of wider intelligence. The giving of political power directly to the masses leads to an extent of corruption and danger so great, that in New York, for instance, notwithstanding all its beauties, many of my friends told me that they felt they were on the brink of a volcano. They did not know when socialism would burst forth and destroy the peace of the country. Like hungry wolves, the masses are eyeing the wealthier classes, being firmly persuaded that they should pull down the existing Government, take legislation in their own hands and re-distribute the wealth of the country in the manner best suited to them. No one can understand the seething ferment which exists in the capital cities of America and Europe who has not gone to those places and been in touch with the different interests of the cities."

"It is usual in India," he continued, "to speak of racial antipathies, and of the white man being the born enemy of the black. The truth is, it is not a question of white and black. It is a question between vested interests, between different kinds of selfishness or corruption which prevails in the hearts of men who have no brotherly feeling, or regard for the eternal principles of love and justice."

By this time quite a number of visitors had come in, and considering it not quite proper to detain them longer, our representative bowed his acknowledgments to Mr. Ramanadhan and withdrew.

The Indian Industrial Exhibition.

BRILLIANT OPENING CEREMONY.

The sixth Indian Industrial Exhibition was opened on Friday, the 21st December 1906, by His Excellency Lord Minto, amidst a scene of splendour and popular enthusiasm such as has not been witnessed in Calcutta in the past. The occasion was absolutely unique.

Scene at the Exhibition Ground.

The scene at the Exhibition grounds was brilliant in the extreme. Those who visited the grounds late on Thursday evening wondered whether the opening ceremony would not prove a *fiasco*—so many of the stalls were empty and still in the hands of workmen and decorators. One noticed, too, such an endless profusion of unopened packages. But a magician has apparently been at work all Thursday night and the remaining part of the day following, and the transformation that one saw was wonderful indeed. Here were roads laid out; the exhibits in their proper places; the dust laid—in a word, order where there was chaos. Those who are in the town are well aware of the almost insurmountable difficulties the Committee had to encounter in the course of their work these one or two months; the veil was lifted within the last few days and the outside public had had the opportunity of knowing somewhat of the heavy strain willingly endured and responsibility borne cheerfully. The Exhibition, in every part of it, is a triumph of organisation.

A Brilliant Gathering.

Everything passed off without a hitch. The gathering that had assembled was as distinguished as any that ever foregathered at a purely non-official function. Among those present were:—His Honour Sir Andrew Fraser and Lady Fraser, His Highness the Maharajah of Cooch-Behar, the Maharajah of Darbhanga, the Maharajah of Cossimbazar, the Hon'ble Sir Francis Maclean and Lady Maclean, Maharajah Sir Jotindra Mohan Tagore, the Hon'ble Sir Denzil Ibbetson, the Hon'ble Mr. E. N. Baker, the Hon'ble Mr. Erle Richards, the Hon'ble Mr. H. A. Sim, the Hon'ble Mr. G. K. Gokhale, the Hon'ble Dr. Rash Behari Ghose, the Lord Bishop of Calcutta and Mrs. Copleston, Sir Chandra Madhab Ghose, Mr. Justice Rampini, Mr. Justice Brett, Mr. Justice Saroda Charan Mitter,

Mr. Justice Harrington, Mr. Justice Woodroffe, Mr. Justice Gupta, Mr. Justice Holmwood, Archbishop' Meuleman, Father Lafont, Raja Peary Mohun Mookerjee, Nawab Ameer Hossain, Prince Buktear Shah, Mirza Shujaat Ali Beg, Mr. K. G. Gupta, Mr. J. Ghosal, the Hon'ble Mr. C. G. H. Allen, Mr. and Mrs. A. Chaudhuri, the Hon'ble Mr. Bhupendranath Bhose, the Hon'ble Mr. Jogendra Chander Ghose, the Hon'ble Mr. Radha Charan Pal, the Hon'ble Rai Sita Nath Roy Bahadur, the Hon'ble Mr. J. Stuart (both of the Eastern Bengal Council), Mr. P. N. Bose, Rai Jogesh Chunder Mitter, Kumar S. K. Deb, Mr. R. D. Mehta, Mr. H. M. S. Rustomjee, Dr. Banks, Dr. Gwyther, Mr. Preo Nath Mullick, Mr. C. Vijayaraghava Chariar (formerly of the Madras Legislative Council), Mr. Provash Chander Mitter, the Rajah of Deghapatia, Kumar Manmatha Nath Mitter, Mr. Lal Mohan Ghose, Rai Krishna Chandra Banerjee Bahadur, Moulvi Mahomed Yusuf, Mr. Norendra Nath Sen, and Mr. Priya Nath Ghose.

The Opening Ceremony.

Punctually, at 4 o'clock, His Excellency the Viceroy and Lady Minto arrived and were received by the Maharajah of Cooch-Bihar, the Maharajah of Darbhanga, the Maharajah of Cossimbazar, and the Hon'ble Mr. J. Chaudhuri, representing the Exhibition Committee and the Hon'ble Dr. Rash Behari Ghose, Chairman of the Reception Committee of the Congress, and conducted to the *dais*.

A Benediction Song.

The proceedings commenced appropriately with the singing of a Mangalam (benediction) song by the Sangit Samaj, assisted by the members of the Bhowanipur Sangit Sammilan.

To Trade and Industry
 Let all thy children be
 Devoted, day and night,
 Break thou thy deadly sleep
 That they their hearts may steep.
 In perseverance aright.
 Let every Indians hand
 In work engaged be!
 It pains our hearts to see
 The sorrows of our land.
 O mother, on thy breast
 Take thy sons oppress
 With hunger ; to them give
 Food that they may live.
 Twenty million souls now lie,
 Goddess, at thy feet and cry.

The Hon'ble Mr. J. Chaudhuri then read the following progress report of the Committee.

The Secretary's Statement.

"After five years, the turn for holding an Industrial Exhibition in connection with the annual sittings of the Congress has fallen on Calcutta. The unsettled condition of the public mind owing to the Partition, distress in Eastern Bengal and high prices prevailing throughout the Bengal Presidency, have added to the difficulties of organization of the present Exhibition. Without the co-operation of Government it would have been impossible to obtain a suitable site for the holding of the Exhibition. The best thanks of the promoters and the organisers of the Exhibition are due to both the Government of Bengal and the Government of India for placing the site adjoining the Presidency General Hospital at their disposal, and for affording all the necessary facilities for the holding of the Exhibition. No sooner was the site granted, a representative Committee was formed for the organization of the Exhibition. In spite of the difficulties mentioned and new developments, such as floods in Behar and Bengal, the Committee have faced the situation boldly and tried to do their best under the circumstances. The popularity of the Exhibition amongst the manufacturing classes in this country may be best judged from the fact that accommodation provided in the original plan had to be increased by one-half as much, to enable applicants to obtain even the minimum space that can be allotted to them under the regulations. This additional construction had cast on the Committee a responsibility which they could have hardly discharged without the pluck, energy and resources of the Exhibition contractor. The number of registered exhibits is over one thousand, which means several thousand exhibitors. Because in many cases Provincial or District exhibits which have been forwarded by local Committees have been counted as a unit. The Exhibition now covers an area of nearly 22 acres, and of this only so much open space has been left as is imperative in the interests of public safety and convenience. It is regarded by many as the biggest Exhibition that has ever been held in Calcutta. The roads alone aggregate to about three miles in length.

"Although the scope of the Exhibition is limited to articles of Indian Manufacture, yet foreign machinery or processes calculated to develop the resources of India are always welcome. So are Educational and Sanitary exhibits from outside India. If the Committee had more time at their disposal, they might have been able to make a better collection of exhibits in these directions. All the same, exhibits in the Machinery Section are by no means poor and are such as are likely to be useful to the Indian public. The most remarkable feature of

the present Exhibition is perhaps the Hand-loom Section. At previous Exhibitions, loom exhibits were a straggling few. But at this Exhibition they form by far the largest section of all exhibits. We provided for them accommodation on a very liberal scale, yet they could not be put all together, and we have had to scatter them about all over the Exhibition sheds. Next to Agriculture, Weaving has been the most ancient and important industry of India, and it is gratifying to find that the Swadeshi Movement has added a new impetus to this dying industry. It is no less a matter of congratulation to find signs of industrial awakening in other directions as well. At previous Exhibitions there were only 2 or 3 Soap Manufacturers in India who exhibited their articles. But in the present Exhibition, there are quite a score of them lying with each other, the bulk of whom come from Bengal and have come into existence quite recently. In this tropical climate where people have almost a passion for bathing, there seems to be an unlimited scope for soap, and we expect that enterprise in this direction will meet with success. Chemical Industries for which India offers a very great scope, also seem to be looking up. Pharmaceutical Works, Pottery, Glass Manufactures all seem to be making headway. Tobacco is grown in abundance in different parts of India, and Indian cigars have already made their mark in the world, and there are indications at this Exhibition that the Cigarette Industry in India may before long attain a similar position. Match Manufacture also seems to be receiving considerable attention. Indian artisans are noted for the quickness of their understanding and the dexterity of their hands. Their drawback is want of education. Labouring under such a disadvantage they readily take to imitation. The Steel Industry to which the artisan class has taken of their own initiative is an example in point.

"Husking Machines and Steam Engines manufactured by illiterate workmen also indicate their latent inventive genius. The Sugar Industry in Bengal has considerably suffered in recent years through German and Australian competition. With a view to revive this industry the co-operation of the Government of the United Provinces has been sought and obtained. The Sugar Factory set up by Mr. Wadi, Assistant Director of Agriculture of the United Provinces, is highly instructive and interesting. It is a matter for congratulation that the Education Department of the Government of Bengal has come forward as an exhibitor. The Shibpur Engineering College and District Board Technical School Exhibits form a very interesting feature of this Exhibition.

"Some of the Colleges have also sent Scientific and Literary exhibits. The idea is an excellent one, and such healthy competition between educational institutions in the country deserves every encouragement. The stall of the Sahitya Parishat shows the fruits of their labour in the region of

Bengalee literature. The portraits of the Mahomedan Viceroys of Bengal and the loan collection from Murshidabad and other ancient places are of uncommon interest. Art Exhibits peculiar to India, such as Ivory Carving, Clay Printing, Embroidery in Gold, Silk and Wool, Inlaid Work on Wood, and Metal Filigree and other works in the Jewellery line receive a great impetus from such an Exhibition. In respect of some of these the Committee has taken care to exhibit how by crude appliances such works of rare beauty are turned out. It is also pleasing to find that the nobler art of Painting and Statuary, which had fallen into decay in India, is also showing signs of revival. In short, the Exhibition, as a whole, gives an indication of the various forces that are now working, both from inside and outside, on the Indian community, in determining the industrial destiny of the Indian nation. It is full of lessons, and suggestions to the Indian people and also to the outside world."

The Maharajah of Darbhanga's Speech.

The Maharajah of Darbhanga, in requesting Lord Minto to declare the Exhibition open, said:—

"My Lord, it is with a peculiar pleasure that I welcome Your Excellency and this great assembly in this Hall. A Hall of Industry is a Hall of Peace. Here the voice of controversy is hushed. I invite you to witness some of the triumphs of peace which have been pronounced on high authority to be no less glorious than those of war. I heartily wish that the triumphs will multiply as time advances, and that in a temple of concord like this, the bonds of union between different races, creeds and classess may be constantly renewed and strengthened. It is a trite saying that the wealth of a country depends upon its commerce and industries. India has been the home of many industries. But they need to be adapted to the requirements of modern times. In consequence of lack of adaptation, and of many other circumstances such as the conditions of Indian social life, shyness of capital, altered tastes and habits of the people and the opening out of new walks of life, some of the old industries have nearly died out, some others have been dwindling. Handicrafts, remarkable in their way as proofs of manual skill and industry have had to face an unequal competition with mechanical appliances of ever-increasing power and refinement. Children of artisans when they have received the elements of a school education, and still more when they have tasted of higher education which, under British rule, has been thrown open to all, have shown an unwillingness to pursue the traditional occupation of their families. When the ranks of any class of artisans have been thinned in this way, caste rules have stood in the way of their being recruited from other classes. The tastes of the people have been so altered that they find some of

the products of the old industries as either too fine or too coarse. So many new careers have been opened out by Government and by mercantile men, that many have deserted old industries in the hope of making surer and larger gains than what they could expect from the old avocations of their fathers. Government have for many years sought to create the taste for industries among people, and with that end in view have established schools of science and industry, have founded scholarships to enable Indian youths to receive a scientific and technical education in the West, have established departments for scientific research and surveys, have appointed experts to act as advisers to Government and as popularisers of knowledge among the people, and have been, as far as possible, patronising products of indigenous industry. I am not aware of a truer friend and patron of Indian industry than Your Excellency. In your speech in Council on the Budget in last March you were pleased to say :—"I say to the supporters of Swadeshi that if Swadeshi means an earnest endeavour to develop home industries in an open market for the employment and for the supply of the people of India, no one will be more heartily with them than myself." We, therefore, felt emboldened to ask Your Excellency to open the Exhibition, and we are deeply thankful that you have consented, in spite of numerous calls on your time and attention, to discharge the office. We also heartily thank Her Excellency Lady Minto for gracing the occasion with her presence. The Exhibition could not be opened under happier or more august auspices, and it is now my pleasing duty, as President of the Exhibition Committee, to invite Your Excellency to declare the Exhibition open."

The Viceroy's Speech.

The Viceroy, in acceding to the request, made a happy and appropriate speech. He said :—"Maharajah, Your Honour, Ladies and Gentlemen—I understand this is the second time the Indian Industrial and Agricultural Exhibition has been held in Calcutta. The first occasion was, I believe, in 1901, the year, in which the Exhibition was inaugurated, and I am very glad to be here to-day to offer it a hearty welcome on its return to the Capital of India. I must thank you, Maharajah, for the cordial reception you have extended to me on behalf of your Committee, and I would venture at the same time to congratulate you on the wise and thoughtful words of your Address. You have reminded me of my reference to Swadeshi in my speech in Council last March, and I hope that my presence here may be some indication of the fulfilment of the promise of support I then held out to those who are earnestly endeavouring to develop home industries in an open market for the employment and for the support of the people of India."

I see round me the results of their labours, and I am gladly here to-day to help them.

"I understand, Maharajah, it was wisely decided at the inauguration of the Exhibition that it was to be dissociated from politics; and I trust we shall all benefit this afternoon by breathing the bracing air of a non-controversial atmosphere. I shall at any rate rejoice if my presence should contribute to confirm the dissociation of honest Swadeshi from political aspirations. There is no occasion, there is no justification for confusing the two, and this Exhibition will do a great work for India if, whilst recognising the right that every man has to his own political opinions and the right to make them known, it enables us all to meet on a Swadeshi platform where, irrespective of our political views, we can work hand in hand for the good of the people. We shall all do well to recognise that though industrial necessities and manufacturing interests must go far to shape the policy of India, that is a very different thing from attempting to direct and control those industries and interests for political purposes.

"I am looking forward, Maharajah, to the opportunity you have afforded me of seeing for myself the many articles of interest the energy of your Committee has collected here. I cannot tell you how heartily I sympathise not only in their endeavours to develop the industrial resources, but in all they are doing to preserve those characteristic native arts for which India has for centuries been celebrated, and skilled handicrafts which the modern world can never hope to rival; whilst in the larger sense of production for purposes of every-day utility and consumption, they have recognised the necessity for the adoption of machinery which modern science has made available to the manufacturer. In these days of competition and of ever-advancing mechanical discovery, India cannot lag behind. We cannot expect the Indian public for sentimental reasons to buy what is inferior and behind the times.

"Sad as it is to see ancient industries give way to novel methods, we should be prepared to welcome all that is good in the inevitable, to adapt our populations to the demands of modern requirements and to educate them in the knowledge of modern inventions. This Exhibition has already done much to indicate to the Indian manufacturer the paths that lead to success. I hope, too, that the Department of Commerce and Industry, over which the Hon'ble Mr. Hewett has so ably presided, has shed an influence over Indian commercial life which may have great results in the future. I congratulate the Committee of the Exhibition on the support they have received from Indian Princes and Chiefs. They have, I can assure them, the warm sympathy of the Government of India, and I know that they have no truer friend in Bengal than Sir Andrew Fraser.

"Maharajah, I have to thank you for your references to Her Excellency and myself. I shall watch the efforts of your Exhibition with the deepest interest, and I have now great pleasure in declaring it open."

Their Excellencies were then taken round the stalls, and left the grounds much pleased, amidst loud cheers.

The 22nd Indian National Congress, 1906.

The 22nd Indian National Congress assembled at Calcutta on Wednesday, the 26th December 1906. The following is the full text of the speech delivered by the Hon'ble Dr. Rash Behari Ghose, C.I.E., the Chairman of the Reception Committee of the Congress :—

BROTHER DELEGATES AND COUNTRYMEN,

“As Chairman of the Reception Committee, it is my privilege to welcome you to Calcutta, a city which in many ways presents a strong contrast to Benares where you assembled last year;—that ‘sweet city of dreaming spires’ plunged in thought and passionately yearning for a higher and truer life than can be found in the things of this world, its pomps, its vanities and its cares. The city of Job Charnock is not, I admit, classic ground. It does not draw our hearts or stir our pulses as Benares does;—so rich in historic associations and so lovely even in her desolation. And yet Calcutta is by no means an unfit place for the meeting of the National Congress; for the life and motion and the many-sided activity, the signs of which are all around you, are typical of the new order that has been called into existence by the play and interaction of Eastern and Western ideals, which without killing our deep spiritual life,—that precious heritage of every child of the East—have inspired us with a sense of social duty incompatible with a life of cloistered seclusion and pale asceticism. And it is this sense of social duty that has brought together from all parts of India, no longer a mere geographical expression, a band of self-denying men representing the intelligence, the culture and the public spirit of the mother land, fired with the noblest and purest purposes, resolved to do their duty to their country and confident in her destiny. They know that for good or for ill they stand face to face with a new world and must adapt themselves to the environment. They know that the problems which now meet them cannot be solved by piety and philosophy alone, and that under the new conditions which have arisen, political and social action is essential to our progress as citizens of the British Empire. Calcutta, therefore, is, I repeat, not an unfit place for the discussion of the new problems which have arisen. Indeed in some ways this city, with its ceaseless roar and whirl, is a fitter place than Benares whose true strength lies not in action but in thought.

"The Committee of which I have the honour to be the Chairman consists of representatives of all sections of the community, including several Mohomedan gentlemen of light and leading, who like the late Mr. Tayabjee, the foremost man among his community in our generation, whose loss is still fresh upon us, believe that their duty to their country is not inconsistent with loyalty to England, I mean true loyalty—the loyalty of the dial to the sun and not that protected loyalty in plush which proclaims itself from the housetops and whenever any person in authority speaks is ready to shout. "It is the voice of a God and not of a Man." With the exception of some Nawabs and Khan Bahadurs in the Eastern Province who are now weeping like the poor Queen of Carthage for Sir Joseph Fuller, you will find on the Reception Committee almost all the most prominent men of Bengal, Behar and Orissa. Maharajahs and Rajahs, representatives of ancient houses, elected members of Legislative Councils, of Municipalities and of Local and District Boards, professors and school-masters, merchants and traders, doctors, journalists and lawyers are all to be found on its rolls. But you will miss two names which have been associated with the Congress from the very beginning. Woomesh Chander Bannerjee and Anund Mohan Bose have been recently lost to us and we are yet in the fulness of our grief. They fought side by side in the service of their country to which they had dedicated their lives and in death were not divided. Woomesh Chander Bannerjee stood by the cradle of the National Congress and nurtured and fostered it with parental solicitude and affection. That Congress which may be said in no small measure to owe its very existence to him comes of age to-day; but our beloved leader so wise and valiant is not with us to partake in our rejoicings. His ashes rest in a foreign land, but a nation's sorrow followed him across the seas to his last resting place in England, the country which next to his own he loved best. In the death of Anund Mohan Bose every one felt as if he had lost a personal friend; for he was of an eminently winning disposition, distinguished not less by his amiability than by the purity of his life. To deep spiritual fervour, he joined a lofty patriotism, working 'as ever in the great Task Master's eye.' Indeed in Anund Mohan Bose patriotism grew to the height of a religion. And it was this happy union of the religious and civic elements in his character that sustained him, when with life fast ebbing away and with the valley of the shadow of death almost in sight, he poured out his soul in that memorable swan song of the 16th of October, 1895, when a whole people plunged in gloom assembled together in solemn protest against the ruthless dismemberment of their country.

"If," says Cicero, "to his country a man gives all, he becomes entitled to what all money cannot buy,—the eternal love of his fellow men." This is the exceeding great reward of

every true patriot and no one can question Anunda Mohan's title to it. His death stirred Calcutta to its depths; and in that vast throng which followed the bier in long and solemn procession every eye was wet with tears, every face was clouded with the shadow of a deep sorrow.

"Our friends have been taken away from us before their work was done. But if the soldier who dies in a forlorn hope has not lived in vain, depend upon it, the lives of Woomesh Chunder Bannerjee and Anund Mohan Bose cannot have been wasted as autumn leaves. True, their seats on the platform are vacant, true they can no longer guide our counsels or plead the cause of their country or defend it by tongue and by pen through good report and through evil report. But they have left behind them a lesson which shall not die and an example for all time to inspire and encourage their countrymen—an example which ought to sustain and comfort us, when as now we are compassed round by dangers and by darkness. Is it an idle fancy or do I really see our departed friends revisiting the scenes of their earthly labours and watching over our deliberations? Yes, they are with us to-day,—our guardian angels and patron saints whom we may reverence and even worship without offence; for such homage and worship, it is no paradox to say, are an ennobling and not a degrading superstition.

"Brother delegates, I spoke just now of dangers and of darkness; and the tale of our afflictions is a long one. We have been tried by desolating floods and by famine in the very heart of the granary of the Province, a famine in which numbers have died of hunger and slow starvation. Prosperity budgets could not keep them alive nor blue books on the material and moral progress of India nourish them. They died, men, women and children without a murmur on their pale lips and their bones are now whitening the plains of East Bengal, together, I believe, with copies of Lord Lytton's Famine Commission Report. But even these visitations pale before the political perils by which we are threatened. For we are truly fallen on evil days and on evil tongues; and Bengal at the present moment is a land of many sorrows in which we have been sustained and consoled only by the sympathy of our countrymen.

"Our trials commenced with the partition of Bengal, that ill-starred measure of that most brilliant Viceroy who had nothing but gibes and sneers for our aspirations and prayers, and who found India comparatively contented and left it fermenting with unrest. The notification of the 16th of October 1905 was the parting gift of Lord Curzon to Bengal;—a Province for which he always dissembled his love. Now, I do not mean to impute unworthy motives to the author of the dismemberment of our Province, but he must be a bold man who should say that the separation of East Bengal is not likely to interfere with the collective power of the Bengalees or the growth of our national

spirit. He must also be a bold man who should say that it is not a menace to the ascendancy of Calcutta, the centre of political and intellectual activity, in this part of the country. He must again be a bold man who should say that the Mahomedan population in the new Province may not be used as tools by artful and unscrupulous persons to keep in check the growing strength of the educated community; for religious animosities may be easily kindled among an illiterate people, though not so easily subdued. A division on the basis of territory and population was tried as we all know by the French Revolutionary Government with the best of intentions but with the most fatal results to the people. They reduced men to loose counters merely for the sake of simple telling, and not to figures whose power is to arise from their place on the table. In the spirit of this geometrical distribution and arithmetical arrangement, these pretended citizens, says Burke, treated France exactly like a conquered country. Acting as conquerors, they imitated the policy of the harshest of that harsh race who condemn a subdued people, and insult their feelings. The policy of such barbarians has ever been, as much as in them lay, to destroy all vestiges of the ancient country, in religion, in polity, in laws and in manners: to confound all territorial limits; and to lay low everything which had lifted its head above the level, or which could serve to combine or rally, in their distress, the disbanded people, under the standard of old opinion. In a word, they destroyed the bonds of their union, under colour of providing for administrative efficiency. These sentiments may be foolishness to a bureaucracy 'mere tailors of business who cut the clothes but do not find the body,' and who think that administrative efficiency can only be secured by the 'augmentation of official power and official members.' But such is not the opinion of the author of the most appreciative life of Burke in our day.

"I do not however wish to detain you with the case against the Partition of Bengal; for no body except possibly G.C.I.E.'s would now care to defend it. But many of you are probably not aware that the public had no opportunity whatever of discussing the scheme which was finally settled and which fell in our midst like a bolt from the empyrean heights of Simla. Now, we may be, as our friends take care to remind us, with perhaps needless iteration, hereditary bondsmen with whom the warlike races in India should have no fellowship; but I must confess, though our friends may not believe it, that we do not like to be treated as so many black beetles even by a brilliant Viceroy. But I am perhaps too hard upon Lord Curzon, who probably meant only to surprise us with this touching proof of his interest in our welfare. His Lordship, as we all know, had a horror of playing to the gallery and loved to do good by stealth, and I have no doubt, blushed when he

found it fame in Printing House square. But even his best friends now admit that it was a great pity his Lordship did not rest on his laurels when he had solved his twelve problems;—a highly suggestive number, but I dare say this was a mere coincidence,

“ We have been told on high authority that the Partition of Bengal is a settled fact but Mr. Morley keeps an open mind, and we refuse to believe that the last word has been said or that the subject will never be re-opened. In the meantime, we cannot allow the question to sleep. Unfinished questions, it has been well said, have no pity for the repose of nations. We have been parted from those who are bound to us by the ties of blood, of race, of language and of country, and bound too by the ties of common ends and common aspirations; and the wound which has been thus inflicted on us refuses to heal. The sentiments of the people have been trampled under foot by an autocratic Viceroy; and we owe it not only to ourselves but also to you our countrymen to give public expression to our feelings. For behind this deliberate outrage upon public sentiment and closely connected with it, there is a very much larger issue affecting the good government of this country. That issue is nothing more, nothing less, than this. Is India to be governed autocratically without any regard to the sentiments and opinions of the people who must be made to know their proper place as an inferior subject-race or on those enlightened principles which are professed by our rulers? The question of Partition looked at from this point of view involves a trial of strength between the people and the bureaucracy, and in that trial, I am sure, we shall have not merely the good wishes but also the active support and sympathy of all our countrymen; and never never were we in greater need of that support and sympathy than at the present moment.

“ Mr. Morley has told us that, if new facts are placed before him, he will reconsider his decision. Do not the numerous anti-partition meetings, over 250 in number, which were held all over Bengal on the 16th of October last, in which nearly a million of people, Hindus and Mahomedans, took part show that the ferment created by the measure is not dying out, and are they not facts which speak for themselves? These demonstrations were not, they could not have been, the work of pestilent agitators, or of the intellectuals, whatever G.C.I.E.'s may affect to believe. Many of these meetings were presided over by Mahomedan gentlemen of rank and influence, and the great gathering in the Federation Ground in Calcutta had for its Chairman my learned and accomplished friend, Moulvi Mahomad Yusuf Khan Bahadur, the President of the Mahomedan Central Association. When there is such a deep rooted and widespread sentiment, although it may not be based on reason, only two courses are possible, coercion or con-

cession. There is no middle course, no halting place, and who can deny that the path of concession is also the path of true wisdom and true statesmanship. The religious animosities again which have been sedulously fostered in East Bengal since the partition, when the Mahomedans came to appreciate the benevolent intentions of Sir Joseph Fuller, are among the bitter first fruits of that measure, to which also it is impossible for Mr. Morley to shut his eyes or close his heart. I am not a statesman or I should have been a K. C. S. I. by this time, writing anonymously to the English Press ; but I can easily foresee how the agitation will gain in volume and strength when the people of East Bengal find themselves living under a different administration and a different system of laws, enforced too by men who would gladly exchange places with their more fortunate brethren in the older province. Is then the Partition of Bengal a settled fact ? By all the hopes within us, we say 'no.' And this is our settled conviction. We know the difficulties by which Mr. Morley is surrounded, but we know also that sympathy is the keynote of his policy ; and the statesman who pacified Ireland may be safely trusted yet to pacify Bengal by placing the Bengali speaking districts under one and the same administration. In Mr. Morley, the philosopher and statesman, the scholar and historian, we have a politician who knows the seasons when to take occasion by the hand, and who will, I am confident, by timely concessions unite in closer bonds England and her great dependency in the East. Some of my countrymen, I know, think that in relation to Indian affairs the Liberal is almost as illiberal as the Tory ; and they may possibly be right. But of Mr. Morley it cannot be certainly said that he has given to party or class what was meant for mankind. To him the sundried bureaucrat is only a bureaucrat and not the very incarnation of wisdom. Nor does he believe in the infallibility of the man on the spot ; for his is not one of those minds which are fed by mere phrases.

"The partition of Bengal was followed by Russian methods of government, with this difference: the officials who devised them were Englishmen, while the Russian official is at least the countryman of those whom he governs or misgoverns. The singing of national songs and even the cry of *Bande Mataram* were forbidden under severe penalties. This ordinance was fittingly succeeded by the prosecution of school boys, the quartering of military and punitive police, the prohibition and forcible dispersion of public meetings, and these high handed proceedings attained their crown and completion in the tragedy at Barisal, when the Provincial Conference was dispersed by the Police who wantonly broke the peace, in order, I imagine, to keep the peace. Now, though we are a thoroughly loyal people and our loyalty is not to be easily shaken, because it is founded on a more solid basis than mere sentiment, I have no

hesitation in saying that we should be less than men if we could forget the tragedy of that day, the memory of which will always fill us with shame and humiliation. And this leads me to remark that it was not cowardice, whatever Mr. MacLeod may think, that prevented our young men from retaliating. It was their respect for law and order—their loyalty to their much reviled leaders that kept them in check.

"All this has now happily been put an end to. But as soon as the cloud began to lift, those Anglo-Indians who are obliged to live in this land of regrets merely from a high sense of duty were seized with the fear that their monopoly of philanthropic work might be interrupted, and immediately commenced a campaign of slander and misrepresentation, which in virulence and mendacity has never been equalled. I.C.S.'s in masks and editors of Anglo-Indian newspapers forthwith began to warn the English people that we were thoroughly disloyal; ferretting out sedition with an ingenuity which would have done no discredit to the professors of Laputa. Cato tells us that the Roman augurs could not look in one another's face without a smile, and I have a shrewd suspicion that the editors and their masked correspondents who joined in this hunt must have exchanged significant glances "across the walnuts and the wine." One Calcutta paper discovered Golden Bengal and told its startled readers that our Province was honeycombed with secret societies. It seems, however, that with the retirement of that redoubtable knight, Sir Joseph Fuller, things took a more serious turn; for we then flung all secrecy aside and openly anointed and crowned Baboo Surendra Nath Bannerjee whom I suppose I must no longer call my friend but my Liege Lord as our king. A floral crown, it was said, might be a harmless thing, but there must have been sedition in the folds of the umbrella, and this silly story appropriately invented in the silly season which heightened our gaiety in Calcutta seems actually to have frightened hysterical old women in England, including some retired Anglo-Indians, whose nerves, I fear, have been shattered by an immoderate use of the taxed salt of India. Where so many distinguished themselves, it might be invidious to mention the name of any particular individual; but I cannot help thinking that our special acknowledgements are due to Dr. Grierson, the great oriental scholar, reputations like fortunes are very easily made by foreigners in India who with that charity which thinketh no evil hastened to inform the English press that *Bande Mataram* is an invocation to *Kali*, the goddess of destruction;—a goddess by the way whose altar will never be deserted as long as the pseudo-imperialism of our day, which means nothing more nothing less than the culture of blood-thirst lasts among the sons of men.

"The Swadeshi movement seems also to have given great offence to a certain section of the Anglo-Indian community.

They have, they say, every sympathy with true Swadeshi but none with the pseudo-Swadeshim of Bengal. Now I confess, that though a lawyer of some standing, not perhaps altogether inapt to find distinctions without any difference, I have never been able to discover the line which separates true from false Swadeshi; though we all know the difference between true and false sympathy. It seems that if you call the movement a boycott of foreign goods, you are a traitor to England. But competition with Manchester is not yet treason in the Indian Statute Book. It is true the movement received an impetus from the Partition of Bengal, when we wanted to draw the attention of England to what we regarded as nothing less than vivisection, the crowning act in a reactionary policy steadily pursued for nearly seven years. But what reasonable man can doubt that the real strength of the Swadeshi movement is to be found in our natural desire to nurse our own industries, which the Government of India with their free trade principles are unable to protect by building up a tariff wall? Mere boycotting we know will not bring happiness or wealth to us, or save our hungry masses from what Mr. Bryon calls the peace of the grave. This can only be done by improving the economical condition of the country, so rich in resources of all kinds, by the creation and diffusion of domestic industries and by the investment of local capital in industrial arts in which India was pre-eminent at one time, but which have now almost all been killed by Western competition. The Swadeshi movement is only a prelude to our determination to enter into the great brotherhood of the trading nations of the West, without, if possible the eternal struggle between capital and labour, into which Japan has already been admitted. And if you want to know what progress we have made, come with me to the Exhibition on the other side of the street, which I hope you have not boycotted, and I will show you what this movement, the implication of which with politics is a mere accident in Bengal from which many of us would gladly dissociate it has already done for us. A visit to it, I am sure, will fill the heart of every one of you with hope and gladness; for in Swadeshim you see the cradle of a new India. To speak of such a movement as disloyal is a lie and calumny. We love England with all her faults but we love India more. If this is disloyalty, we are, I am proud to say, disloyal. But is there a single Englishman who really thinks in his heart that the material progress of the country will loosen the ties which bind us to England? On the contrary, would it not by relieving the economical drain on India, bind the two countries closer together?

"Swadeshim I need not remind you is not a new cult. It counted among its votaries almost all thoughtful men long before the division of Bengal and found expression in the Industrial and Agricultural Exhibition held under the auspices of the

National Congress in Calcutta in 1901. It does not I repeat mean hostility to any thing and every thing that is British but merely the awakening of an industrial life. The Swadeshi movement has been the principal motive power in the industrial development of the country, and I would remind those who say that Bengal can only talk, that in the course of the present year more than ten lacs of rupees have been given by Bengalees for the encouragement of technical education. Our young men are now taking in large numbers to industrial pursuits and are qualifying themselves for their different callings in the national institutions which have been recently opened in Calcutta; but the most promising feature in the movement is that it has brought the masses and the educated classes together, as it promises to the artisan and labourer some mitigation of the chronic poverty in which they are now steeped. And here I must interrupt myself for a moment to point out that the great assistance which has been rendered to us by Government in organizing our Exhibition shows their friendliness to the Swadeshi movement. This action of Government, I am sure, will tend to draw closer the ties which should bind them and the people together; and their co-operation which has been of the greatest help to us ought to give food for reflection to those who revile Government in season and out of season. It would perhaps be idle to endeavour to convince men who brood only on the old commercial jealousy of England, which did not a little to kill Irish and Indian industries. But I may be permitted to point out that they forget that in those days a ruling race did not regard itself as subject to the restraints which now govern its relations with a subject race. It is true the ethical code of Plato is not as yet the code of the statesman, but it is now generally acknowledged that to impoverish a subject race is not only unwise but morally wrong.

"I trust I have said enough to satisfy every sane man that we have no idea of driving the English into the sea by our speeches and writings. I am aware that some irresponsible and impulsive journalists and platform speakers have been occasionally betrayed into the use of intemperate language. But is there no excuse for them? We have been called yelping jackals, wolves and chattering *bunderlog*; and even the Viceroy has been described as a nincompoop, and the Secretary of State a dummy, because they would not reduce us to the position of whipped curs. But what is even worse than 'yelping jackals,' 'chattering *bunderlog*' and 'whipped curs' we have been the butt of a Scotchman's wit. Again one paper which shall be nameless spoke of the 'organised scoundrelism' of Eastern Bengal, and threatened us with the gallows and the sword to be used as remorselessly as in the dark days of the mutiny for the 'tiger spirit' of the editor had been roused. It is true he spoke of the tiger spirit of the English; but natural history does not

furnish any instance in which a lion has degenerated into a tiger in India, although such a transformation is not perhaps absolutely impossible. There was not one to speak the fitting word, the word in due season to soothe our bruised hearts.

"It would however be idle to deny, and I do not pretend to deny, that a bitter and angry feeling is growing up in the country; but I deny that there is any sedition or disloyalty; though I am confident that if Lord Curzon's bigamous Lieutenant had been allowed to work his will in the Eastern Province, the ferment created by the Partition would have reached a critical point. It would be idle to deny and I do not pretend to deny that the reactionary policy pursued by the late Viceroy has left behind it a burning sense of helplessness and humiliation and has driven some of my countrymen, as yet small in numbers almost mad with indignation. They are, generally speaking, impulsive young men of whom I would say nothing harsher than that they seem to me to love their country not wisely but too well. But to charge them with open or covert disloyalty is to forget that mere academic discussion is not sedition nor pious opinions a crime. I say pious opinions, because no man out of Bedlam and very few even inside it regard such discussions as falling within the range of practical politics, and the notion that we want the English to clear out immediately bag and baggage is too absurd for any credulity but the credulity of those whose conscience has made them cowards. Our critics should also remember that nations like individuals sometimes lose their heads and that the Partition of Bengal is one of those maddening wrongs under which it is not possible for the unhappy sufferers to show prudence and moderation. These qualities should rather be shown by those who have driven a law-abiding people to the very verge of madness. Even the Bengalee cannot be expected always "to hope all things, to believe all things and to endure all things." "But those who have used to cramp liberty, as the author of the Drapier's Letters points out, have gone so far as to resent even the liberty of complaining; although a man upon the rack was never known to be refused the liberty of roaring as loud as he thought fit."

"The men of whom I am speaking have lost all confidence in the good faith of Government and have persuaded themselves that England means to treat India as a mere pawn in her military and diplomatic enterprises, a close preserve for the classes, and a happy hunting ground for the white adventurer. They have persuaded themselves that our rulers wish to exclude us for all time from all the higher offices and from all share in the administration of the country. They have persuaded themselves that it is idle to expect any concessions from our rulers. Look, they say, at Ireland, look at your own country and you will be sick and weary of all the hollow words which

have been uttered and all the hollow promises which have been made; for is not the Queen's Proclamation associated only with frustrated hopes and unredeemed pledges. In a word, they have persuaded themselves that our rulers wish to keep us in long clothes in a state of perpetual tutelage. For my part I decline to believe any thing of the kind. But, I ask, is there no excuse for the pessimism of those misguided young men whose hearts are sick with hope deferred. Might they not cite in their defence not the irresponsible criticisms of 'failed' Lieutenant-Governors or American and French travellers, but the responsible utterances of Statesmen like the late Lord Salisbury and of Viceroy's like the late Lord Lytton. Mind, I am not going to defend these persons but only endeavouring to account for their bitter attitude towards a Government, which whatever may be its errors or shortcomings, has conferred untold blessings on the country.

"Many things are possible. One thing, however, is to me inconceivable. I can never believe that England will ever retrace her steps or forget her duty to India where she came not as a conqueror;—those who speak of the conquest of India by a mere handful of Englishmen cannot have read history which does not record any authentic miracles, where she came not, I repeat, as a conqueror but as a deliverer with the ready acquiescence of the people, to 'heal and to settle' to substitute order and good government for disorder and anarchy, to fit 'stone to stone again' and restore that edifice which had been slowly and painfully built up by the wisest and best of Indian sovereigns. That task has now been accomplished, white winged peace now broods over the whole land; and it only remains for England now to fit us gradually for that autonomy which she has granted to her colonies. Then and not till then will the mission of England in India be accomplished and the glorious dream of Akbar realised;—a dream which did not, I am sure, issue from the gate of ivory. Then and not till then will the bar-sinister be removed,—that badge of inferiority and subjection which must chafe and gall men who have been nourished on the glorious literature of England,—that literature which as the founder of English education in India justly boasted has taught France principles of liberty and which must carry with it wherever it spreads a love of British virtues and of British freedom. Great is the destiny of England but equally great are her responsibilities, involving a sacred trust; but I am confident that the august mother of free nations, the friend of struggling nationalities and of emancipation all over the world will rise to the height of her duty. Shall Christian England fall below pagan Rome who, in her best days, conquered only to extend the privileges of citizenship to her subjects, investing them with equal rights and equal laws, equally administered. The Romans

were not inspired with the mere lust of conquest or exploitation nor did they seek empire for new markets for their wares. They were fired by a nobler ideal ; and they had their reward in the gratitude of their contented subjects, which was as a robe and diadem to the Mistress of the World. To England more has been given and of her more will be required. And depend upon it, she will not disappoint you for the people to whom the fortunes of our country have been entrusted are generous ; if somewhat impassive, and should not be judged by those Anglo-Indians who regard India as an oyster to be opened with the sword, and to whom the Queen's proclamation is *anathema maranatha* and the National Congress a *Frankenstein*. Such men I have no hesitation in saying are false to their King and their country. But take my word for it, their hostility to the children of the soil, though it may for a time infect the classes in England, will not deceive the great democracy which is fast rising into power. But you must have patience. You must learn to wait and everything will come to you in time. Remember the long and arduous struggle in England before the Catholics were emancipated or the Test Acts were repealed. Remember the great fight which Cobden had to fight for the repeal of the Corn Laws. Remember the public agitation and the ferment before the first Reform Act was passed. Remember too how very slowly the Irish Church fell and the long continued agitation before the Irish Landlaws were reformed, and when you hear the English described as a nation of shopkeepers, do not forget that they spent 20 millions to emancipate the slave. Our difficulties are very much greater, for we have not only to face class prejudices, but also the prejudices so hard to die, of race, of religion and of colour, for we are unhappily in every sense aliens. But do not be discouraged, do not despair. There is not the least cause for despondency. Have confidence in yourselves and also in the good faith of England ; and do not I pray you be led away by the passions of the moment, and when you are met by calumnies and lies, console yourselves with the reflection that the just claims of the great body of the English people have been similarly met by the party of privilege and supremacy and a subservient Press. Remember that in Mr. Morley, we have a most sympathetic Secretary of State and in Lord Minto an equally sympathetic Viceroy, imbuéd, if I may say so without impertinence, with a strong sense of justice who, though he may possibly think that some of our aspirations are premature, will not I am, certain, sneer them down or treat them with levity which cuts deeper than the surgeon's knife or the sword. We have also friends in England who are devoted to our cause. But perhaps the most hopeful sign is the increased interest which the English public at home are taking in the affairs of this country. The appointment again of Mr. Morrison to the India Council marks a new

departure which is full of promise ; and foreshadows the doom of bureaucracy in India ; for the new member is free from the narrowness and excessive self-esteem which are the notes of the bureaucrat, who is under the delusion " that the elaborate machinery of which he forms a part and from which he derives his dignity is a grand and achieved result and not a mere working and changeable instrument ; " and whose over-weening conceit cannot be cured even by the King of Babylon's famous treatment which was so successful with the Satrap Iraj. Mr. Morley is now engaged in digging the grave of bureaucracy ; and we can almost hear the thud of the spade and the music, yes, the music of the knell. Brother Delegates ! Be of good cheer for, Lo, the winter is almost past, the rain is over and gone, and the flowers begin to appear on the earth.

" But if the present situation in India calls for the exercise of statesmanship of the highest order, it also calls for the exercise of great moderation on our part. And we are all glad to welcome Mr. Dadabhai Naoroji, that tried friend of India, as President of the 22nd Session of the Indian National Congress. Though he has already considerably exceeded the years allotted to man, he accepted our invitation with an alacrity which ought to be a lesson to us all. Age has not withered, the dust of daily life has not choked the courage, energy, enthusiasm, high purpose and self-devotion which have throughout characterised our Grand Old Man. I see many in this assembly distinguished by their zeal and devotion not less than by their ripe wisdom and experience, faithful patriots who have been working for their country with hearts that never failed and courage that never faltered, fighting the good fight amid obliquity and sneers, and not unfrequently under the frowns of men in authority. But it is no disparagement to these gentlemen to say that there is not one amongst them who has a greater, a longer or a more brilliant record than Dadabhai Naoroji. Words are too weak to express our debt to the man, who in his eighty-second year has ventured on a long journey to give us at a critical time the benefit of his wise counsel without the hope of any reward other than the consolation which will cheer him in the evening of his days that to the very last he was faithful to his country and to the National Congress. And if it is true that the sunset of life gives us mystic lore, we shall hear from his lips the future destiny of the country : he loves so well and for which he has at our invitation risked everything, ease, health, nay, life itself. He will tell us not to despair but to confide in the honesty and good faith of England. He will tell us that a great Empire and mean thinking go ill together, and that the pinchbeck imperialists who think that Kipling is greater than Shakespeare or Milton, and who can explain away the Queen's proclamation, do not represent either the best intelligence or the conscience of England.

"I said pinchbeck imperialists, for imperialism in its best and truest sense does not mean privilege and supremacy but good government and equal rights. It was this spirit which inspired Chatham when he pleaded for the better government of India and Ireland. It was this spirit which sustained Burke in that famous trial which has made his name familiar as a household word in India. It was this imperial spirit which inspired Palmerston when he thrilled the heart of England with the proud boast, that as the Roman in the days of old held himself free from indignity when he could say *Civis Romanus Sum*, so also a British subject, in whatever land he may be shall feel confident that the watchful eye and the strong arm of England will protect him against injustice and wrong. It was this spirit which inspired Gladstone in our day when he sought to redress the wrongs of Ireland. It was this spirit which inspired Bright when he pleaded for the better government of India. But the pinchbeck imperialism which is fast going out of fashion in England is mad up of barbarous ambitions, passions and sentiments wholly alien to the culture and civilization of the twentieth century. To these brummagem imperialists I would say:—Do not misread the signs of the times; Do not be deluded by theories of racial inferiority. The choice lies before you between a contented people proud to be the citizens of the greatest empire the world has ever seen and another Ireland in the East or I am uttering no idle threat, I am not speaking at random for I know something of the present temper of the rising generation in Bengal, perhaps another Russia. To my mind, but Mr. MacLeod who, I believe, is not a countryman of Oliver Cromwell will say it is impossible for a Bengalee to think imperially, to my mind the choice is not difficult to make, and I am confident every true son of England who is jealous of honour of his country will make the better choice. Indeed, though certain recent events might seem to belie it, he made that choice long ago; for he knows that though the world is indebted for many things to England, the true home of free institutions, her best title to glory will be, the words are familiar to every school-boy in India, that she has so ruled a people once great as to have made them desirous and capable of all the privileges of citizens. I have also a word of warning and counsel for some of my younger countrymen. I would say to them in the words of Marcus Aurelius "Hope not for the republic of Plato; but be content with ever so small an advance, and look on even that as a gain worth having," and I beseech them though they may be goaded to madness by abuse and slander not to be betrayed into an attack on the honour or good faith of England, for as our present Secretary of State tells us in his Life of Gladstone, though the plain people of England are inspired by a sense of fair play which is indeed ingrained in the English character, they will refuse even the shadow of a con-

cession, if you assail the greatness or integrity of their country.

"Brother Delegates. Allow me before I sit down to repeat my welcome and to express our sense of the honour you have done us by accepting our hospitality. You have no doubt heard a good deal of our internal dissensions which our enemies have artfully tried to inflame. But I can assure you that whatever may be our differences, it does not affect the cordiality of our welcome to you, our friends and countrymen, who have manfully stood by us in our trials as brother should by brother, to the discomfiture and confusion of those who have sought to set class against class, race against race, and religion against religion. These men have failed. They were bound to fail because great but silent forces are at work, which no earthly power, or I will not use the epithet which rises to my lips, but merely say human cunning can arrest; a national life has commenced which is growing more and more vigorous every day and this great assembly in which every province is represented is the best answer to those who still have the hardihood to assert that India is a mere geographical expression. It is said that our country is a mere medley of races, of religions and opposing interests and that the only tie which binds the Maharatta and the Madrassi, the Sikh and the Bengalee, is that of common obedience to their Rulers. But the same thing used to be said of Germany and Italy but both have now become great and powerful nations. Whether the same good fortune awaits us is in the lap of the gods. But the men of England, rely upon it, will never knowingly attempt to avert or delay it by even a single day.

"To those who say that our aspirations are premature my answer is the ideal is not bound by time and that life itself would be an idle tale without meaning, if we were not sustained by the hope of leaving our country better than we found it. In the words of a living English writer who calls himself a meliorist: "Without ideals there would be no hope, and without hope, neither religion, nor aspiration, nor energy, nor good work. A true ideal is no dream, nor idle fantasy. It is the justification of study, and the motive of all useful endeavour."
Bande Mataram.

MR. DADABHOY NAOROJI'S PRESIDENTIAL ADDRESS.

"Good Government could never be a substitute for Government by the people themselves."—(*Sir H. Campbell-Bannerman, Stirling, 23-11-05*).

"But this, I do say, that political principles are after all the root of our national greatness, strength and hope."—(*Mr. John Morley, King's Hall, Holborn, 4-6-1901.*)

"But if you meddle wrongly with economic things, gentlemen, be very sure you are then going to the very life, to the heart, to the core of your national existence."—(*Free Trade Hall, Manchester, 19-10-1903.*)

LADIES AND GENTLEMEN,—I thank you most sincerely for honouring me for the third time with the Presidentship of the Indian National Congress. I hope I shall have your cordial help and support.

I may here express my deep sorrow at the loss India has suffered in the deaths of Mr. W. C. Bonnerjee, Justice Budrudin Tyabji, Mr. Anand Mohan Bose and Mr. Vera Raghavacharia.

I offer my sincere thanks to the "Parliament Branch of the United Irish League," the Breakfast Meeting, the North Lambeth Liberal and Radical Club and the National Democratic League for their enthusiastic and cordial Godspeed to me.

This is the first Congress after its having come of age. It is time that we should carefully consider what the position of the Indians is at present and what their future should be.

In considering this important matter I do not intend to repeat my lamentations over the past. I want only to look to the future.

The work of the Congress consists of two parts:—

First and most important, is the question of the policy and principles of the system of Government under which India ought to be governed in the future.

Second is to watch the operation of the administration as it now exists, to propose from time to time any reforms and changes that may be deemed necessary to be made in the various departments, till the present system of government is radically altered and based upon right principles and policy in the accomplishment of the first part mentioned above.

I desire to devote my Address mainly to the first part of the work of the Congress, viz., the policy and principles which ought to govern India in future.

What position do the Indians hold in the British Empire? Are they British citizens or not is my first question? I say we are British citizens and are entitled to, and claim all British citizens' rights.

I shall first lay before you my reasons for claiming that we are British citizens.

Reason I. The Birthright.

The acknowledgment of this birthright was declared on the very first occasion when England obtained the very first territorial and sovereign possession in India. The British statesmen of the day at once acted upon the fundamental basis of the British Constitution and character, that anyone howsoever and wheresoever, who came under the British flag, was a free British citizen as "if born and living in England."

The fundamental basis in the words of the present Prime Minister is:—"Freedom is the very breath of our life. We stand for liberty, our policy is the policy of freedom." In the words of Mr. Morley:—"Yes, gentlemen, the sacred word "free" which represents, as Englishmen have always thought until to-day, the noblest aspiration that can animate the breast of man." This birthright to be "free" or to have freedom is our right from the very beginning of our connection with England when we came under the British flag.

When Bombay was acquired as the very first territorial possession, the government of the day in the very first grant of territorial rights to the East India Company declared thus:—

(EXTRACT FROM THE "GRANT TO THE FIRST EAST INDIA
COMPANY OF THE ISLAND OF BOMBAY,
DATED 27TH MARCH, 1669.")

"And it is declared that all persons being His Majesty's subjects inhabiting within the said Island and their children and their posterity born within the limits thereof shall be deemed free denizens and natural subjects as if living and born in England."

And further all the terms of the first grant are extended in it to all future British territorial acquisitions. Thus is the claim of Indians to be "free" and to all the rights of British natural subjects, as if living and born in England, are distinctly acknowledged and declared from the very first political connection with England.

Having given the declaration made some two and a half centuries back in the 17th century, that the moment we Indians came under the British flag, we were "free" citizens, I next give you what two of the prominent statesmen of this, the 20th century, have said. When the Boers were defeated and subjugated, and came under the British Flag, the present Prime Minister said (14th June 1901):—

"These people with whom we are dealing are not only going to be our fellow-citizens, they are our fellow-citizens, already."

Sir William Harcourt at the same time said :—" This is the way in which you propose to deal with your fellow-citizens."

Thus the moment a people came under the British flag they are " free " and British " fellow-citizens." We Indians have been British citizens as our birthright, as " if born and living in England " from the first moment we came under the British Flag.

The Boer war cost Britain more than two hundred millions and 20,000 dead, and 20,000 wounded. India, on the other hand, has enriched Britain instead of costing anything—and the blood that was shed was largely Indian blood—and yet this is a strange contrast. The Boers have already obtained self-government in a few years after conquest, while India has not yet received self-government though it is more than 200 years from the commencement of the political connection.

All honour and glory to the British instincts and principles and to the British statesmen of the 17th century. The Liberals of the present day and the Liberal Government have every right to be proud of those " old principles," and now that a happy and blessed revival of those sacred old principles has taken place, the present Government ought fairly to be expected to act upon those old principles, and to acknowledge and give effect to the birth-right of Indians as " if living and born in England." England is bound to do this. Our British rights are beyond all question. Every British Indian subject has franchise in England as a matter of course, and even to become a Member of Parliament. Nobody in England dreams of objecting to it. Once in my case, from party motives, an objection was suggested to entering my name on the register as an elector, and the revising barrister at once brushed aside the objection for, that as an Indian I was a British citizen.

Reason II. Pledged Rights.

The grant to the first East Indian Company cited in Reason I. is both a declaration of the rights of Indians as British citizens as well as a pledge of those rights by that declaration.

Queen Victoria, in her letter to Lord Derby asking him to write the Proclamation himself, said :—

" And point out the privileges which the Indians will receive in being placed on an equality with the subjects of the British Crown and prosperity flowing in the train of civilization."

Thereupon the Proclamation then declared and pledged unreservedly and most solemnly calling God to witness and bless :—

" We hold Ourselves bound to the Natives of our Indian Territories by the same obligations of duty which bind Us to Our other subjects, and these obligations by the blessing of Almighty God We shall faithfully and conscientiously fulfil."

Can there be a more sacred and solemn pledge before God and Man !

On the occasion of the Proclamation of the Queen as Empress

of India, she sent a telegram to Lord Lytton which he read in the open Durbar consisting of both Princes and people. In this telegram the Queen Empress said :—

“That from the highest to the humblest all may feel that under Our rule, the great principles of liberty, equity and justice are secured to them, and that to promote their happiness, to add to their prosperity and advance their welfare are ever present aims and objects of Our Empire.”

And it is clear that this object of promoting our happiness, &c., &c., can only be attained by our enjoyment of the principles of liberty, equity and justice, *i.e.*, we must have the British liberty of governing ourselves.

On the occasion of the Jubilee of 1887 the Queen-Empress again pledged and emphasised the pledges of the Proclamation thus :—

“Allusion is made to the Proclamation issued on the occasion of my assumption of the direct government of India as the Charter of the liberties of the Princes and people of India. It has always been and will continue to be my earnest desire that the principles of that Proclamation should be unswervingly maintained.”

We are now asking nothing more or less than the liberties of our Charter—our rights of British citizenship.

The present King-Emperor has pledged :—

“I shall endeavour to follow the great example of the first Queen-Empress to work for the general well-being of my Indian subjects of all ranks.”

Again the King-Emperor in his Speech on 19th February, 1906, said :—

“It is my earnest hope that in these Colonies as elsewhere *throughout my dominions* (the italics are mine) the grant of free institutions will be followed by an increasing prosperity and loyalty to the Empire.”

And the Prime Minister clinches the whole that “good government could never be a substitute for government by the people themselves.”

How much less is then an economically evil government and constitutionally, an unconstitutional despotic government, a substitute for self-government,—and how much absolutely necessary it is to produce “increasing prosperity and loyalty to the Empire,” “the grant of free institutions.”

With the solemn pledges I have mentioned above, we have every right to claim an honourable fulfilment of all our British pledged rights. And so we claim all British rights as our birth-right and as our solemnly pledged rights. Britain's duty, humanity, honour, instincts and traditions for freedom, solemn pledges, conscience, righteousness and civilization demand the satisfaction to us of our British rights.

Reason III. Reparation.

All our sufferings and evils of the past centuries demand before God and Man a reparation, which we may fairly expect from the present revival of the old noble British instincts of liberty and self-government. I do not enter into our past sufferings as I have already said at the outset.

Reason IV. Conscience.

The British people would not allow themselves to be subjected a single day to such an unnatural system of Government as the one which has been imposed upon India for nearly a century and half. Sir H. Campbell-Bannerman has made a happy quotation from Mr. Bright:—"I remember John Bright quoting in the House of Commons on one occasion two lines of a poet with reference to political matters:—

"There is on Earth a yet diviner thing,
Veiled though it be, than Parliament, or King."

Then Sir Henry asks:—"What is that diviner thing? It is the human conscience inspiring human opinion and human sympathy." I ask them to extend that human conscience, "the diviner thing" to India in the words of Mr. Morley:—

"It will be a bad day indeed if we have one conscience for the Mother Country and another conscience for all that vast territory over which your eyes do not extend."

And now the next question is—What are the British rights which we have a right to "claim"?

This is not the occasion to enter into any details or argument. I keep to broad lines.

(1) Just as the administration of the United Kingdom in all services, departments and details, is in the hands of the people themselves of that country, so should we in India claim that the administration in all services, departments and details should be in the hands of the people themselves of India.

This is not only a matter of right and matter of the aspirations of the educated—important enough as these matters are—but it is far more an absolute necessity, as the only remedy for the great inevitable economic evil which Sir John Shore pointed out a hundred and twenty years ago, and which is the fundamental cause of the present drain and poverty. The remedy is absolutely necessary for the material, moral, intellectual, political, social, industrial and every possible progress and welfare of the people of India.

(2) As in the United Kingdom and the Colonies all taxation and legislation and the power of spending the taxes are in the hands of the representatives of the people of those countries, so should also be the rights of the people of India.

(3) All financial relations between England and India must be just and on a footing of equality, i.e., whatever money India may find towards expenditure in any department—Civil or Mili-

tary or Naval—to the extent of that share should Indians share in all the benefits of that expenditure in salaries, pensions, emoluments, &c., materials, &c., as a partner in the Empire, as she is always declared to be. We do not ask any favours. We want only justice. Instead of going into any further divisions or details of our rights as British citizens, the whole matter can be comprised in one word—"Self-Government" or *Swaraj* like that of the United Kingdom or the Colonies.

Mr. Morley says very truly and emphatically (*Banquet, King's Hall, Holborn, 4th June 1901*):—

"But this I do say that political principles are after all the root of our national greatness, strength and hope."

So for India also there can be no national greatness, strength and hope except by the right political principles of self-government.

Now the next important question is whether it is practicable to grant these rights of self-government at once or when and in what way? Nobody would, I think, say that the whole present machinery can be suddenly broken up at once and the rights which I have defined, of self-government, can be at once introduced.

Taking Right No. I, of placing all administration in every department in the hands of the people of India, has the time arrived to do anything loyally, faithfully and systematically as a beginning at once, so that it may automatically develop into the full realisation of the right of self-government.

I say,—yes. Not only has the time fully arrived, but had arrived long past, to make this beginning. The statesmen of nearly three-quarters of a century ago not only considered the point of making a beginning, not merely made a pious declaration, but they actually passed an Act of Parliament for the purpose. Had that Act been honourably and faithfully fulfilled by the Governments from that time to this, both England and India would have been in the position, not of bewailing the present poverty, wretchedness and dissatisfaction of the Indian people, but of rejoicing in the prosperity of India and of still greater prosperity of England herself.

In the thirties of the last century, England achieved the highest glory of civilization—by its emancipations of the body and soul of man—by abolishing slavery and by freedom of conscience, to enjoy all the rights of British citizenship. During those glorious days of English history, the statesmen of the time did not forget their duty to the people of India. They specially and openly considered the question of self-government for India; not only in connection with Britain, but even with the result of entire independence from Britain. When the Act of 1833 was passed, Macaulay made that memorable speech about the duty of Britain towards India of which Britain shall for ever be proud. I cannot quote that whole speech here. Every word of it is worth study

and consideration from the statesmen of the day. I shall give only a few extracts. He first said: "I must say that, to the last day of my life I shall be proud of having been one of those who assisted in the framing of the Bill which contains that Clause" "It would be, on the most selfish view of the case, far better for us that the people of India were well-governed and independent of us than ill-governed and subject to us." "We shall never consent to administer the pousa (a preparation of opium) to a whole community—to stupify and paralyse a great people, whom God has committed to our charge, for the wretched purpose of rendering them more amenable to our control."

"We are free, we are civilised, to little purpose if we grudge to any portion of the human race an equal measure of freedom " and civilization." . . . "I have no fears. The path of duty is plain before us and it is also the path of wisdom, of national prosperity, of national honour." . . . "To have found a great people sunk in the lowest depths of slavery and superstition, to have so ruled them as to have made them desirous and capable of all the privileges of citizens, would indeed be a title to glory all our own."

Such was the glorious spirit in and auspices under which was enacted in Macaulay's words "that wise, that benevolent, that noble clause."

"That no native of the said territory, nor any natural born subjects of His Majesty resident therein, shall by reason only of his religion, place of birth, descent, colour or any of them, be disabled from holding any place, office or employment under the said Company."

I would not repeat here what I have often stated about this clause. Sufficient to say that simultaneous examinations in India have been declared authoritatively as the only honourable fulfilment of the clause.

Here is then the beginning that can be made at once, not as a new thing, but as one fully considered and settled by Act of Parliament 73 years ago. The power is ready in the hands of the Secretary of State for India to be put into execution at once, without the necessity of any reference to Parliament or any authority.

And in connection with this step, I would earnestly urge upon the Secretary of State to retrace the pernicious step which has lately been taken in India of abolishing competition for the services to which admission is made directly in India. In England, competition is the basis of all first admissions in all the services, and the same must be the basis in India as the fairest and most in accordance with justice.

This beginning will be the key, the most effective remedy, for the chief economic and basic evil of the present system.

Mr. Morley has truly said:—"But if you meddle wrongly with economic things, gentlemen, be very sure you are then going

to the very life, to the heart, to the core of your national existence."

And so the economic muddle of the existing policy is going to the life, to the heart, to the core of our national existence. A threefold wrong is inflicted upon us, *i.e.*, of depriving us of wealth, work and wisdom, of everything, in short, worth living for. And this beginning will begin to strike at the root of the muddle. The reform of the alteration of the services from European to Indian is the key-note of the whole.

On the score of efficiency also, foreign service can never be efficient or sufficient. Sir William Hunter has said :—" If we are to govern the Indian people efficiently and cheaply we must govern by means of themselves." The Duke of Devonshire, as Indian Secretary, has said (23rd August 1883): "There can, in my opinion, be very little doubt that India is inefficiently governed." In the very nature of things it cannot be otherwise.

After the simultaneous examinations are carried on for some years, it will be time to transfer the examinations altogether to India to complete the accomplishment of the rights (No. 1) of self-government without any disturbance in the smooth working of the administration.

Co-ordinately with this important beginning for Right No. 1, it is urgent to expedite this object, that education must be most vigorously disseminated among the people—free and compulsory primary education, and free higher education of every kind. The Indian people will hail with the greatest satisfaction any amount of expenditure for the purpose of education. It was free education that I had at the expense of the people that made me and others of my fellow-students and subsequent fellow-workers to give their best to the service of the people for the promotion of their welfare.

Education on the one hand and actual training in administration on the other hand, will bring the accomplishment of self-government far more speedily than many imagine.

Heavy expenditure should be no excuse. In fact, if financial justice, to which I shall refer hereafter, is done in the relations between England and India there will be ample provision even from the poor revenues of India—and with every addition of Indians in place of Europeans, the resources of India for all necessary purposes will go on increasing.

Right No. 2. Representation.

In England itself, Parliamentary Government existed for some hundreds of years before even the rich and middle classes and the mass of the people had any voice or vote in it.

Macaulay pointed out in 1831 that the people living in the magnificent palaces surrounding Regent's Park and in other such places were unrepresented. It is only so late as 1832 that the middle classes obtained their vote, and it is only so late

as 1885 that most of the mass of the people obtained their franchise. Women have no vote. Adult franchise is yet in struggle.

It is no use telling us, therefore, that a good beginning cannot be made now in India for what Mr. Gladstone called "living representation." The only thing needed is the willingness of the Government. The statesmen at the helm of the present government are quite competent and able to make a good beginning—such a systematic beginning as that it may naturally, in no long time, develop itself into full legislatures of self-government like those of the self-governing colonies. I need not go into any details here of the scope and possibilities of representation. The educated and thinking classes in India who have attended English schools and colleges are not the only people to be reckoned with. There is a large body who now are informed of the events of the world and of all British institutions by the vernacular press and literature in their own language.

The peasants of Russia are fit for and obtained the Duma from the greatest autocrat in the world, and the leading statesman, the Prime Minister of the free British Empire, proclaimed to the world "the Duma is dead, long live the Duma"! Surely the fellow-citizens of that statesman and the free citizens of that Empire by birthright and pledged rights are far more entitled to self-government, a constitutional representative system, than the peasants of Russia. I do not despair. It is futile to tell me that we must wait till all the people are ready. The British people did not so wait for their Parliament. We are not allowed to be fit for 150 years. We can never be fit till we actually undertake the work and the responsibility. While China in the East and Persia in the West of Asia are awakening and Japan has already awakened and Russia is struggling for emancipation—and all of them despotisms—can the free citizens of the British Indian Empire continue to remain subject to despotism—the people who were among the first civilizers of the world? Modern world owes no little gratitude to these early civilizers of the human race. Are the descendants of the earliest civilizers to remain, in the present times of spreading emancipation, under the barbarous system of despotism unworthy of British instincts, principles and civilization.

Right No. 3. Just Financial Relations.

This right requires no delay or training. If the British Government wills to do what is just and right, this justice towards self-government can be done at once.

First of all take the European Army Expenditure. The Government of India in its despatch of 25th March 1890 says:—

"Millions of money have been spent on increasing the Army in India, on armaments, and on fortifications to provide for the security of India, not against domestic enemies or to prevent the invasion of the warlike peoples of adjoining countries, but to maintain the supremacy of British power in the East."

Again the Government of India says :—

“It would be much nearer the truth to affirm that the Imperial Government keeps in India and quarters upon the revenues of that country as large a portion of its army as it thinks can possibly be required to maintain its dominion there, that it habitually treats that portion of its army as a reserve force available for imperial purposes; that it has uniformly detached European regiments from the garrison of India to take part in imperial wars whenever it has been found necessary or convenient to do so; and more than this, that it has drawn not less freely upon the native army of India towards the maintenance of which it contributes nothing to aid it in contests outside of India and with which the Indian Government has had little or no concern.”

Such is the testimony of the Government of India that the European Army is for Imperial purposes.

Now I give the view taken in the India Office itself.

Sir James Peile was a member of the Council of the Secretary of State for India, and presented the Indian Secretary on the Royal Commission (Welby's) on Indian expenditure. Sir James Peile in a Minute, after pointing out that the military policy which regulated Indian Military expenditure was not exclusively Indian, urged that :—

“It is worthy of consideration how far it is equitable to charge on a dependency the whole military cost of that policy, when that dependency happens to be the only part of the Empire which has a land frontier adjacent to the territory of a great European power.”

Here, then, these extracts of the Government of India and the India Office show that the European Army expenditure is entirely for British Imperial purposes, and yet with flagrant injustice the burden is thrown by the Treasury upon the helpless Indian people.

In the same way all the Government expenditure in England which entirely goes to the benefit of the people in England, and which is for British purposes, is imposed on the Indian people while the Colonies do not pay any portion for similar expenditure in England. This expenditure should in common justice not be imposed on India. It is unjust. Here then, if we are relieved of burdens which ought not in common justice to be imposed upon us, our revenues, poor as they are at present, will supply ample means for education and many other reforms and improvements which are needed by us. This question is simply a matter of financial justice. I have put it on a clear, just principle and on that principle India can be quite ready to find the money and its own men for all her own needs—military, naval, civil or any other. For imperial expenditure we must have our share in the services in proportion to our contribution.

These just financial relations can be established at once. They require no delay or preparation. It only needs the determination and will of the British Government to do justice. Lastly as to self-government. If the British people and statesmen make

up their mind to do their duty towards the Indian people they have every ability and statesmanship to devise means to accord self-government within no distant time. If there is the will and the conscience, there is the way.

Now I come to the most crucial question—particularly crucial to myself personally.

I have been for some time past repeatedly asked whether I really have, after more than half a century of my own personal experience, such confidence in the honour and good faith of British statesmen and government as to expect that our just claim to Self-government as British citizens will be willingly and gracefully accorded to us with every honest effort in their power, leaving alone and forgetting the past.

Ladies and gentlemen, I shall give you a full and free answer.

In 1853 when I made my first little speech at the inauguration of the Bombay Association, in perfect innocence of heart, influenced by my English education into great admiration for the character, instincts and struggles for liberty of the British people, I expressed my faith and confidence in the British Rulers in a short speech from which I give a short extract:—

“When we see that our Government is often ready to assist us in everything calculated to benefit us, we had better than merely complain and grumble, point out in a becoming manner what our real wants are”

and I also said:

“If an Association like this be always in readiness to ascertain by strict enquiries the probable good or bad effects of any proposed measure, and whenever necessary to memorialise Government on behalf of the people with respect to them, our kind Government will not refuse to listen to such memorials.”

Such was my faith. It was this faith of the educated of the time that made Sir Bartle Frere make the remark which Mr. Fawcett quoted, *viz.*, that he had been much struck with the fact that the ablest exponents of English policy and our best coadjutors in adapting that policy to the wants of the various nations occupying Indian soil, were to be found among the Natives who had received a high-class English education. And now, owing to the non-fulfilment of solemn pledges, what a change has taken place in the mind of the educated!

Since my early efforts I must say that I have felt so many disappointments as would be sufficient to break any heart and lead one to despair and even, I am afraid, to rebel.

My disappointments have not been of the ordinary kind but far worse and keener. Ordinarily a person fights—and if he fails he is disappointed. But I fought and *won* on several occasions, but the executive did not let us have the fruit of those victories—disappointments quite enough, as I have said, to break one's heart. For instance, the “Statutory” Civil Service, Simultaneous Examinations, Lord Lawrence Scholarships, Royal Commission, &c.,

I am thankful that the repayment from the treasury of some unjust charges has been carried out, though the Indian Secretary's salary is not yet transferred to the Treasury as it was hoped.

But I have not despaired. Not only that I have not despaired, but at this moment, you may think it strange, I stand before you with hopefulness. I have not despaired for one reason—and I am hopeful for another.

I have not despaired under the influence of the good English word which has been the rule of my life. That word is "Persevere." In any movement, great or small, you must persevere to the end. You cannot stop at any stage, disappointments notwithstanding, or you lose all you have gained and find it far more difficult afterwards even to begin again. As we proceed, we may adopt such means as may be suitable at every stage, but persevere we must to the end. If our cause is good and just, as it is, we are sure to triumph in the end. So I have not despaired.

Now the reason of my hopefulness which I feel at this moment after all my disappointments. And this also under the influence of one word "Revival"—the present "revival" of the true old spirit and instinct of liberty and free British institutions in the hearts of the leading statesmen of this day. I shall now place before you the declarations of some of the leading statesmen of the day and then you will judge that my faith and hope are well founded, whether they will be justified or not by future events.

Here, I give you a few of these declarations—but I give an Appendix A of some of these declarations out of many :

SIR H. CAMPBELL-BANNERMAN.

"We believe in self-government. We treat it not as an odious necessity, not as a foolish theory to which unfortunately the British Empire is committed, we treat it as a blessing and as a healing, a sobering and a strengthening influence."

(Bradford, 15-5-1901.)

"I remain as firm a believer as ever I was in the virtue of self-government." (Ayr, 29-10-1902.)

"But here is another self-government and popular control—and we believe in that principle."

MR. JOHN MORLEY.

"Yes, gentlemen, the sacred word 'free' which represented as Englishmen have always thought until to-day, the noblest aspirations that can animate the breast of man."

(Palmerston Club, 9-6-1900.)

"In his view the root of good government was not to be found in bureaucracy or pedantocracy. They must seek to rouse up the free and spontaneous elements lying deep in the hearts and minds of the people of the Country."

(Arbroath, 23-10-1903.)

The study of the present revival of the spirit, instincts and traditions of Liberty and Liberalism among the Liberal statesmen of the day has produced in my heart full expectation that the end of the evil system, and the dawn of a Righteous and Liberal policy of freedom and self-government are at hand for India. I trust that I am justified in my expectations and hopefulness.

Ladies and gentlemen, we have all the powerful moral forces of justice, righteousness and honour of Britain, but our birthright and pledged rights and the absolute necessity and humanity of ending quickly all the sufferings of the masses of the people, from poverty, famine, plagues, destitution and degradation, &c. On our side if we use those moral forces, which are very effective on a people, we must, we are bound to win. What is wanted for us is to learn the lesson from Englishmen themselves—to agitate most largely and most perseveringly, by petitions, demonstrations and meetings, all quite peacefully but enthusiastically conducted. Let us not throw away our rights and moral forces which are so overwhelming on our side. I shall say something again on this subject.

With such very hopeful and promising views and declarations of some of the leaders of the present Government, we have also coming to our side more and more, Parliament, Press and Platform. We have some 200 members in the Indian Parliamentary Committee. The Labour Members, the Irish Nationalist Members, and the Radicals are sympathetic with us. We have several Liberal papers such as *The Daily News*, *The Tribune*, *The Morning Leader*, *The Manchester Guardian*, *The Star*, *The Daily Chronicle*, *Justice*, *Investors' Review*, *Reynolds*, *New Age* and several others taking a juster view of India's rights and needs. We must make *India* a powerful organ. We have all sections of the Labour or Democratic Party, the British Nationalist Party, the Radicals and Liberals generally taking larger interest in Indian matters. The large section of the British people to whom conscience and righteousness are above every possible wordly thing, are also awakening to a sense of their duty to the vast population of India in their dire distress, and poverty, with all its dreadful consequences. When I was in Parliament and the only Indian, I had the support of the Irish, Radical and Labour Members. I never felt helpless and alone, and I succeeded in several of my efforts. We must have many Indian Members in Parliament till we get self-government. Under such favourable circumstances let us not fail to make the most of our opportunity for our political emancipation. Let us, it is true, at the same time do what is in our power to advance our Social and Industrial progress. But for our political emancipation, it will be a great folly and misfortune for us to miss this good fortune when it has at last come to us, though I fully admit we had enough of disappointments to make us lose heart and confidence.

I base my hope upon the "revival" of the old British love of

liberty and self-government, of honour for pledges, of our rights of fellow British citizenship. Within the short life that may yet be vouchsafed to me, I hope to see a loyal, honest, honourable and conscientious adoption of the policy of self-government for India—and a beginning made at once towards that end.

I have now expressed to you my hopes and reasons for such hopes, for ourselves. But as the Moral Law, the greatest force of the Universe, has it,—in our good, will be England's own greatest good. Bright has wisely said :—"The good of England must come through the channels of the good of India.....In order that England may become rich India itself must become rich." Mr. Morley has rightly said :—"No, gentlemen, every single right thing that is done by the Legislature, however moderate be its area, every single right thing is sure to lead to the doing of a great number of unforeseen right things." (*Dundee*, 9-12-1889). If India is allowed to be prosperous by self-government as the Colonies have become prosperous by self-government, what a vista of glory and benefits open up for the citizens of the British Empire, and for mankind, as an example and proof of the supremacy of the moral law and true civilization.

While we put the duty of leading us on to self-government in the heads of the present British statesmen, we have also the duty upon ourselves to do all we can to support those statesmen by, on the one hand, preparing our Indian people for the right understanding, exercise and enjoyment of self-government, and on the other hand of convincing the British people that we justly claim and must have all British Rights. I put before the Congress my suggestions for their consideration. To put the matter in right form, we should send our "Petition for Rights," to His Majesty the King-Emperor, to the House of Commons and to the House of Lords. By the British Bill of Rights of 1689—by the 5th Clause—"the subjects have the right to present petitions to the Sovereign."

The next thing I suggest for your consideration is that the well-to-do Indians should raise a large fund to Patriotism. With this fund we should organise a body of able men and good speakers, to go to all the nooks and corners of India and inform the people in their own languages of our British rights and how to exercise and enjoy them. Also to send to England another body of able speakers, and to provide means to go throughout the country and by large meetings to convince the British people that we justly claim and must have all British rights of self-government. By doing that, I am sure that the British conscience will triumph and the British people will support the present statesmen, in their work of giving India responsible self-government in the shortest possible period. We must have a great agitation in England, as well as here. The struggle against the Corn Laws cost, I think, two millions and there was a great agitation. Let us learn to help ourselves in the same way.

I have said at the beginning that the duties of this Congress are two-fold. And of the two, the claim to a change of present policy leading to self-government is the chief and most important work.

The second part of the work is the vigilant watch over the inevitable and unnecessary defects of the present machinery of the Administration as it exists and as long as it exists. And as the fundamental principles of the present Administration are unsound, there are inherent evils, and others are naturally ever arising from them. These the Congress has to watch, and adopt means to remedy them as far as possible till self government is attained, though it is only when self-government is attained that India will be free from its present evils and consequent sufferings.

This part of the work the Congress has been doing very largely during all the past twenty-one years, and the subjects committee will place before you various resolutions necessary for the improvement of the existing administration as far as such unnatural and uneconomic administration can be improved. I would have not troubled you more but that I should like to say a few words upon some topics connected with the second part of the work of the Congress—Bengal Partition and *Swadeshi* movement.

In the Bengal partition, the Bengalees have a just and great grievance. It is a bad blunder for England. I do not despair but that this blunder, I hope, may yet be rectified. This subject is being so well threshed out by the Bengalees themselves that I need not say anything more about it. But in connection with it, we hear a great deal about agitators and agitation. Agitation is the life and soul of the whole political, social and industrial history of England. It is by agitation the English have accomplished their most glorious achievements, their prosperity, their liberties and, in short, their first place among the Nations of the World.

The whole life of England, every day, is all agitation. You do not open your paper in the morning but read from beginning to end it is all agitation—Congress and Conferences—Meetings and Resolutions—without end, for a thousand and one movements, local and national. From the Prime Minister to the humblest politician his occupation is agitation for everything he wants to accomplish. The whole Parliament, Press and Platform is simply all agitation. Agitation is the civilized peaceful weapon of moral force, and infinitely preferable to brute physical force when possible. The subject is very tempting. But I shall not say more than that the Indian journalists are mere Matriculators while the Anglo-Indian journalists are Masters of Arts in the University of British Agitators. The former are only the pupils of the latter, and the Anglo-Indian journalists ought to feel proud that their pupils are doing credit to them. Perhaps a few words from an English statesman will be more sedative and satisfactory. Macaulay has said in one of his speeches :—

“I hold that we have owed to agitation a long series of

beneficent reforms which would have been effected in no other way the truth is that agitation is inseparable from popular government Would the slave trade ever have been abolished without agitation? Would slavery ever have been abolished without agitation?"

For every movement in England—hundreds, local and national—the cheap weapons are agitation by meetings, demonstrations and petitions to Parliament. These petitions are not any begging for any favours any more than that the conventional "your obedient servant" in letters makes a man an obedient servant. It is the conventional way of approaching higher authorities. The petitions are claims for rights or for justice or for reforms,—to influence and put pressure on Parliament by showing how the public regard any particular matter. The fact that we have more or less failed hitherto, is not because we have petitioned too little. One of the factors that carries weight in Parliament is the evidence that the people interested in any question are really in earnest. Only the other day Mr. Asquith urged as one of his reasons against women's franchise that he did not see sufficient evidence to show that the majority of the women themselves were earnest to acquire the franchise. We have not petitioned or agitated enough at all in our demands. In every important matter we must petition Parliament with hundreds and thousands of Petitions—with hundreds of thousands of signatures from all parts of India. Taking one present instance in England, the Church Party has held till the beginning of October, 1,400 meetings known, and many more unknown, against the Education Bill and petitioned with three-quarters of a million signatures and many demonstrations. Since then, they have been possibly more and more active. Agitate, agitate over the whole length and breadth of India in every nook and corner—peacefully, of course—if we really mean to get justice from John Bull. Satisfy him that we are in earnest. The Bengalees, I am glad, have learnt the lesson and have led the march. All India must learn the lesson—of sacrifice of money and of earnest personal work.

Agitate, agitate means inform, inform. Inform the Indian people what their rights are and why and how they should obtain them, and inform the British people of the rights of the Indian people and why they should grant them. If we do not speak, they say we are satisfied. If we speak, we become agitators! The Indian people are properly asked to act constitutionally while the Government remains unconstitutional and despotic.

Next about the "settled fact." Every Bill defeated in Parliament is a "settled fact." Is it not? And the next year it makes its appearance again. The Education Act of 1902 was a settled fact. An Act of Parliament, was it not? And now within a short time what a turmoil is it in? And what an agitation and excitement has been going on about it and is still in prospect. It may lead to a clash between the two Houses of Parliament.

There is nothing as an eternal "settled fact." Times change, circumstances are misunderstood or change, better light and understanding, or new forces come into play, and what is settled to-day may become obsolete to-morrow.

The organizations which I suggest, and which I may call a band of political missionaries in all the Provinces, will serve many purposes at once—to inform the people of their right, as British citizens, to prepare them to claim those rights by petitions and when the rights are obtained, as sooner or later they must be obtained, to exercise and enjoy them.

"Swadeshi" is not a thing of to-day. It has existed in Bombay as far as I know for many years past. I am a free-trader, I am a Member, and in the Executive Committee of the Cobden Club for 20 years, and yet I say that "Swadeshi" is a forced necessity for India in its unnatural economic muddle. As long as the economic condition remains unnatural and impoverishing, by the necessity of supplying every year some Rs. 20,00,00,000 for the salary, pensions, &c., of the children of a foreign country at the expense and impoverishment of the children of India, to talk of applying economic laws to the condition of India is adding insult to injury. I have said so much about this over and over again that I would not say more about it here—I refer to my book. I ask any Englishman whether Englishmen would submit to this unnatural economic muddle of India for a single day in England, leave alone 150 years? No, never. No, ladies and gentlemen, England will never submit to it. It is, what I have already quoted in Mr. Morley's words, it is "the meddling wrongly with economic thing, that is going to the very life, to the very heart, to the very core of our national existence" (Vide Appendix B)

Among the duties which I have said are incumbent upon the Indians, there is one which, though I mention last, is not the least, I mean a thorough political union among the Indian people of all creeds and classes. I make an appeal to all—call it mendicant if you like—I am not ashamed of being a mendicant in any good cause and under necessity for any good cause. I appeal to the Indian people for this, because it is in their own hands only, just as I appeal to the British people for things that are entirely in their hands. In this appeal for a thorough union for political purposes among all the people, I make a particular one to my friends the Mahomedans. They are a manly people. They have been rulers both in and out of India. They are rulers this day both in and out of India. They have the highest Indian Prince ruling over the largest Native State, viz., H. H. the Nizam. Among other Mahomedan Princes they have Junagad, Radhanpur, Bhopal and others.

Notwithstanding their backward education they have the pride of having had in all India the first Indian Barrister in Mr. Budrudin Tyabji and first Solicitor in Mr. Kamrudin Tyabji,

two Mahomedan brothers. What a large share of Bombay commerce is in the hands of Mahomedans is well-known. Their chief purpose and effort at present, must be to spread education among themselves. In this matter among their best friends have been Sir Syed Ahmed and Justice Tyabji in doing their utmost to promote education among them. Once they bring themselves in education in a line with the Hindus, they have nothing to fear. They have in them the capacity, energy and intellect, to hold their own and to get their due share in all the walks of life—of which the State services are but a small part. State services are not everything.

Whatever voice I can have, I wish Government would give every possible help to promote education among the Mahomedans. (Once self-government is attained, then will there be prosperity enough for all, but not till then. The thorough union, therefore, of all the people for their emancipation is an absolute necessity.

All the people in their political position are in one boat. They must sink or swim together. Without this union all efforts will be vain. There is the common saying—but also the best common-sense—"United we stand—divided we fall."

There is one other circumstance, I may mention here. If I am under the impression that the bulk of the Bengali Mahomedans are Hindus by race and blood only a few generations ago. They have the tie of blood and kinship. Even now a great mass of the Bengali Mahomedans are not to be easily distinguished from their Hindu brothers. In many places they join together in their social joys and sorrows. They cannot divest themselves from the natural affinity of common blood. On the Bombay side, the Hindus and Mahomedans of Gujarat all speak the same language, Gujarati, and are of the same stock, and all the Hindus and Mahomedans of Maharnastic Annan—all speak the same language Marathi and are of the same stock—and so I think it is all over India, excepting in North India where there are the descendants of the original Mahomedan invaders, but they are now also the people of India.

Sir Syed Ahmed was a nationalist to the back-bone. I will mention an incident that happened to myself with him. On his first visit to England, we happened to meet together in the house of Sir C Wingfield. He and his friends were waiting and I was shown into the same room. One of his friends recognising me introduced me to him. As soon as he heard my name he at once held me in strong embrace and expressed himself very much pleased. In various ways I knew that his heart was in the welfare of all India as one nation. He was a large and liberal minded patriot. When I read his life some time ago I was inspired with respect and admiration for him. As I cannot find my copy of his life I take the opportunity of repeating some of his utterances which Sir Henry Cotton has given in *India* of 12th October last.

Mahomedans and Hindus were, he said, the two eyes of India. Injure the one and you injure the other. "We should try to become one in heart and soul and act in unison; if united we can support each other, if not the effect of one against the other will tend to the destruction and downfall of both."

He appreciated when he found worth and freely expressed it. He said "I assure you that the Bengalees are the only people in our country whom we can properly be proud of, and it is only due to them that knowledge, liberty and patriotism have progressed in our country. I can truly say that they are really the head and crown of all the communities of Hindustan. In the word nation I include both Hindus and Mahomedans because that is the only meaning which I can attach to it."

Such was the wise and patriotic counsel of that great man and our Mahomedan friends will, I hope, take it to heart. I repeat once more that our emancipation depends upon the thorough union of all the people of India without any obstruction.

I have often read about the question of a constitution for the Congress. I think the gentlemen who raise this question would be the proper persons to prepare one like a Bill in the House of Commons in all its details. The Congress then can consider it and deal with it as the majority may decide.

Let every one of us do the best he can, do all in harmony for the common object of self-government.

Lastly, the question of social reforms and industrial progress—each of them needs its own earnest body of workers. Each requires for it separate devoted attention. All the three great purposes—Political, Social and Industrial—must be set working side by side. The progress in each will have its influence on the others. But as Mr. Morley truly and with deep insight says:—"Political principles are, after all, the root of our national greatness, strength and hope," and his other important utterance which I repeat with this one, sums up the whole position of the Indian problem. He says: "The meddling wrongly with economic things, that is going to the very life, to the very heart, to the very core of our national existence."

This meddling wrongly with economic things is the whole evil from which India suffers—and the only remedy for it is—"Political principles are, after all, the root of our national greatness, strength and hope." And these political principles are summed up in self-government. Self-government is the only and chief remedy. In self-government lies our hope, strength and greatness.

I recommend to your serious notice the treatment of British Indians in South Africa.

I give a small Appendix B of some facts and figures which I need not read now.

Well, ladies and gentlemen, I have finished my task. I do not know what good fortune may be in store for me during the short period that may be left to me, and if I can leave a word of affection and devotion for my country and countrymen. I say, be united, persevere, and achieve self-government so that the millions now perishing by poverty, famine and plague, and the scores of millions that are starving on scanty subsistence, may be saved and India may once more occupy her proud position of yore among the greatest and civilized nations of the world.

Appendix A.

Here I confine myself to some of the declarations as to the duty of Liberalism and the absolute necessity of self-government for progress and prosperity.

DECLARATIONS OF THE RT. HON. SIR HENRY CAMPBELL-BANNERMAN.

"There is one thing in which I will yield to none of them—namely in my devotion to the Liberal Party and my faithful adherence to Liberal principles. . . . We are members of the party of progress and action and movement, and not the party of mere resistance and delay."

(The Reform Club, 6-2-1899).

"The Liberal Party was described by its great Leader as a great instrument of progress. It is a great instrument for progress and the question is how are we best to use that great instrument?"

(House of Commons, 16-2-1899).

"The views and opinions which I have set before you are those of a Liberal. They are the opinions which have been traditions in that Party. We seek the good of the people through the people and by trusting the people. We wish to destroy privilege or monopoly whether of class or sect or person when it is hurtful to the people. And whether in internal constitution or in external policy we hold that it is not power, nor glory, nor wealth that exalteth a nation, but righteousness, justice and freedom. It is for you to say whether you are with us or against us.

"I do not confound territorial extent with strength nor do I see that the glory or success of the Empire is increased by beating down our neighbours."

(Election Address, 21-9-1900).

"The British power cannot there and elsewhere rest securely unless it rests upon the willing consent of a sympathetic and contented people."

(Oxford, 2-3-1901).

"It is only by the consent of the governed that the British Nation can govern."

(Plymouth, 19-11-1901).

"What are these principles and facts? The virtues, the efficacy, the justice of self-government. That is one Liberal principle. The appreciation and encouragement of National sentiment. That is another Liberal principle. The recognition of the popular will constitutionally expressed through the people's repre-

sentatives. That is another Liberal principle That may do for principles."

(*Leicester*, 19-2-1902).

"We Liberals are accustomed to freedom of thought and action. Freedom is the breath of our life. . . . It possesses in two of its most sacred dogmas, the only solution of the chief problems which confront our country in Imperial Policy and in regard to our domestic needs It is the universal doctrine of government by assent—government with the consent of the governed Why there is but one cardinal condition again of Liberal principle—that of direct popular control by those concerned. Now, these are two of the beacons by which Liberal policy should be guided."

(*National Liberal Club*, 5-3-1902).

"The principles of the Party (Liberal)—not any new-fangled principles, but the old ones which were as good to-day and as much required as they were two or three hundred years ago—were the only principles which could lead to the happiness of the people and to the development of the power and prosperity of the community."

(*Skipton*, 10-12-1902).

"If it can be shown that poverty whether it be material poverty or poverty of physique and of energy, is associated with economic conditions, which though supported by the laws of the country are nevertheless contrary to economic laws and to public policy, the State can intervene without fear of doing harm."

(*Newport*, 30-11-1903).

"What is the Liberal Policy? We stand for liberty. Our policy is the policy of freedom. It is the policy of freedom in all things that affect the life of the people, freedom of conscience freedom from class ascendancy

(*Norwich*, 26-10-1904).

"John Bull had many weak points no doubt, but he had one good point above all others—that he liked that which was straightforward and open and candid, and honest and above-board both in language and in action."

(*National Liberal Club*, 1-6-1905).

Now I say if there is any man who is a true John Bull in respect of straightforwardness, etc., Sir Henry Campbell Bannerman is one.

"Our principles and one of these principles let me tell you is that the interests of persons, classes and sections must yield to the general interests of the community."

(*Portsmouth*, 16-11-1905).

"Good government could never be a substitute for government by the people themselves."

(*Stirling*, 23-11-1905).

"Ladies and gentlemen, so much for peace, so much for economy—two cardinal Liberal principles. But here is another—self-government and popular control: and we believe in that principle, not only on grounds of justice and on the grounds of effective administration, but on this other ground—that it exercises a wholesome influence on the character of the people who enjoy the privilege."

(*Albert Hall, 21-12-1905*).

"Sir, in all these subjects on which I have been touching, what is the aim to be kept in view, what is the star which we ought to keep our eyes upon to see that we are moving in the right direction? It is that we should promote the welfare and happiness and interests not of any particular class or section of the community but of the nation at large. That is the work of true patriotism, these are the foundations upon which a solid empire may be built.

(*Albert Hall, 15-12-1905*).

"The new government had, he verily believed, the public conscience, the public sense of right, the public love of equity. With these they would win."

(*Liverpool, 9-1-1906*).

"The present government would set themselves to apply the old Liberal principles to legislation and administration, the principles of freedom, of equal treatment of all sections of the community in civil and ecclesiastical affairs. They will include the principle of self-government, the idea that people knew best about their own affairs and would give up the old idea that there should be some superior people in the country who were to tell their neighbours what was good for them."

(*Stirling Burghs—Culross, 12-1-1906*).

"The policy and spirit which would govern the action of the present Government would be based on justice and liberty, not on privilege and monopoly."

(*Glasgow, 15-1-1906*).

"And the third is the belief that in Ireland as in every other country throughout the King's dominions self-government is the best and safest and healthiest basis on which a community can rest."

(*Inverness, 18-1-1906*).

"We, lovers of our country, lovers of our constitution, lovers of our public traditions and lovers of plain dealing . . . I am proud and glad and relieved to see a revival of the old political spirit . . . the spirit which has made Liberalism a moral force, a force making for justice sustained by a belief in mankind, and anxious to better the condition of our common life . . . It was a great uprising against a doctrine, a habit of thought and a practice in public life,

a method of government abhorrent to the conscience and heart of the nation."

(*National Liberal Club, 14-2-1906.*)

DECLARATIONS OF THE RT. HON. JOHN MORLEY.

"Imperialism by all means, if it means mercy, if it means humanity, if it means justice, but if it means your own demoralization, if it means lowering your own standard of civilization and humanity, then in the name of all you hold precious beware of it and resist it."

(*Sydney, 25-5-1899.*)

"When he (Mr. Gladstone) died Lord Salisbury said of him that he was a great Christian. Yes and I would add that he was not a Christian for nothing. I think he must often have used to himself the language of Wordsworth, "Earth is sick and heaven is weary of the swollen words that States and Kingdoms utter when they talk of truth and justice." He at all events in face of all the demands of practical politics did his best to bring those considerations of truth and justice into the minds and hearts of his countrymen But I do say that Mr. Gladstone when he saw the nations going on a wrong path saw high in the heavens the flash of the uplifted sword and the gleam of the arm of the Avenging Angel."

(*Manchester—Unveiling of Statue, 10-10-1901.*)

"It is this policy of passing measures for Ireland without reference to the Irish themselves that is responsible for most of the mischief and misgovernment from which Ireland has so long suffered From observation of Irish Government, from experience of Irish Government, from responsibility of Irish Government, I say to you, gentlemen, face to face, it is a bad government, it is a government which no nation, no set of people can be expected to endure in peace, and it is a government which we in our conscience ought to do our very best, when the time comes, when opportunity presents itself to put right as we have put so many other evils in our own system of government right."

(*Manchester, 12-3-1902.*)

With how much more force do these words apply to India!

"We are going to have I suppose—well we may have a proposal to suspend the constitution of Cape Colony. Just picture the scene in the House of Commons. The motion is made to protest against the suspension of Parliamentary Institutions in the Cape Colony. We then all get up, and we all make eloquent, passionate, argumentative speeches in favour of the right of the Colonies to govern themselves. The next day Mr. Redmond makes a motion in favour of giving self-government, in one shape or another to Ireland. We then all pick out a new set of arguments. What was on Monday unanswerable on Tuesday becomes not worth mentioning. What was on Monday a sacred principle of

self-government becomes on Tuesday mere moonshine and claptrap. That is a comedy in which I at least do not propose to take part. The Boers are to have self-government in order to make them loyal. The Irish are not to have it because they are disloyal.”
(*Edinburgh*, 7-6-1902).

What a true picture of the way which India is treated !

“ We are citizens, common citizens of a grand country ; we are the heirs of a noble tradition ; we believe that human progress can only be won by human effort—and that effort, I hope, all in our different degrees, ages and situations will pursue with determination, with unselfishness and with a resolute directness and simplicity that must in the end win a crowning victory.”

(*National Liberal Federation-Annual Meeting*, 13-5-1904).

“ He was for liberty wherever they could get it.”

* * * * *

“ He looked forward to a vigorous, progressive, pacific, rational policy. The new Government he hoped would realise that courage in large politics was the true common sense and he looked forward to the true progressive movement.

* * * * *

“ Last Session the whole Liberal Party in the House of Commons voted in favour of Mr. Redmond's Amendment which stated that the present system of government in Ireland was in opposition to the will of the Irish People, and gave them no voice in the management of their affairs, was extravagantly costly and did not enjoy the confidence of any section of the population, was productive of universal discontent and unrest, and had been proved to be incapable of satisfactorily promoting the material and intellectual progress of the people.

“ Surely then it was incredible that a Party which supported an indictment so damning should have no policy for dealing with such a state of affairs. . . .

“ He would recall the fact that Sir Henry Campbell-Bannerman, the Leader of the Liberal Party, who had stuck to his guns, had saved his party, said, speaking on that very amendment.

“ What was the principle at the root of the policy ? It was the right of the Irish people to the management of their own domestic affairs. The successive plans by which this was to be given to them failed to satisfy the country ; but the principle of self-government, the principle of an elective element that shall be the governing element in Irish affairs still remains.”

(*Forfar*, 20-10-1905).

“ But whatever the schemes and wisdom of a statesman might be, he should know that all the glittering adventures of imperial pride were vain and empty, were delusive and guilty, if he did not constantly have before him the aim of mitigating the

lot of the great masses of men, women and children who were always very near hunger and nakedness."

(*Walthamstow*, 20-11-1905).

DECLARATIONS OF THE RT. HON. H. H. ASQUITH.

"The Liberal Party is—as it always has been the standing enemy of unjustified privileges and of unequal laws. . . . The spirit of Liberalism is a strong and a vital factor—is as strong and as vital as it ever was—in moulding the conceptions and the ideals of the British people."

(*Kilmarnock*, 5-10-1897.)

"No one in this country—no British Liberal at any rate—can contemplate with satisfaction a system under which numbers of our own countrymen are denied some of those civil and political rights which we are accustomed to regard as the necessary equipment of a civilized social community."

(*Leven*, 2-9-1899.)

"We call ourselves Liberals. We are proud of the name. We are prepared to maintain our title to it against all comers. . . . But how do we stand? What has been in days gone by the essence of the Liberal creed and the spirit of Liberal work? I think I may say and you will agree with me that for the first sixty or seventy years of the present century, the chief mission of Liberalism was the mission of emancipation. It waged war with religious disabilities that offended the conscience and blocked the road to talent. . . . more important than either it was the Liberalism of that time which laid the foundations of Democratic Government, in a Society which had never been swept and levelled by the tornado of revolution. . . . If we look beyond these shores to the Greater Britain of which we have become Trustees, I think we see there again equally clear ground for the application of old principles to new problems. We are proud of the British Empire. There is no distinction on that point between one party in the State and the other. But empire is a blessing or a curse according to the spirit in which its responsibilities are approached and handled. . . .

According to what I believe to be the liberal conception of Empire it is something vastly greater and higher than this. There are—I believe I am speaking your sense as well as my own—in the judgment of us Liberals two tests of a standing or falling empire. We ask in the first place, does it in all its parts make the standard not merely of material life, but of all that goes to enrich civilization and humanity, higher and more deeply founded, more securely safeguarded. We ask next does its unity arise not from the compulsory acquisition of subject races, but from the conscious and willing co-operation of living and self-determining members? Does it rest not upon the predominance, artificial and superficial

of race or class, but upon the loyal affection of free communities built upon the basis of equal rights ? ”

(*Edinburgh*, 10-1-1900).

I pause here a little. We Indians also had the good fortune in sharing in the glorious work of the Liberal statesmen of the thirties of the last century. We also had our emancipation by the Act of 1833. What a glorious and truly noble and liberal work was that at that time ! I have already touched upon that subject. Had that Act been honourably, loyally and sincerely carried out what a glorious empire would by this time the British Empire have become, and how truly and nobly would the two tests laid down above have been fulfilled ! The present grand revival of Liberalism with its irresistible power is just the opportune moment to accomplish by a bold effort, the redemption of the past failure of duty, conscience, humanity and honour.

“ Liberty and justice the touchstone of policy of the Empire and its external arrangements. . . . In these methods lay the only hope for the future honour of our Empire.”

(*Oxford*, 24-2-1900).

“ Liberty was the best antidote or medicine for discontent and disloyalty.”

(*Tayport*, 14-9-1900).

“ It is the work of statesmanship in this country to make the Empire worth living in, as well as worth dying for. In the long run every society is judged and every society survives according to the material and moral minimum which it prescribes to its members.”

(*Hotel Cecil*, 19-7-1901).

“ You should aim from the very beginning at such a progressive development in self-government as will in time ripen into the full autonomy of Australia or Canada. That policy ought to commend itself not only to the Liberal Party but to the whole country.”

(*Hanley*, 14-1-1902).

“ The great experience of Canada where by the granting of free institutions, races which seventy years ago were flying at one another's throats were now sitting down side by side in harmony and contentment.” (That will be the case in India).

(*St. Leonards*, 14-3-1902).

“ Mr. Asquith proceeded to set forth the Liberal ideal. This he said implied self-government and self-development in fiscal as in all other matters. An excellent example was to be found in the history of Canada where internal dissensions and external revolt against the Empire had been quelled by self-government. So that the French and British portions of the population had worked out an ideal for themselves resulting in prosperity.”

(*Morley*, 2-2-1906).

"If they gave the new Liberal Government a strong, strenuous, independent working majority they would find many directions, in which arrears had to be made up, reactionary steps retraced, and lost ground recovered, they would do what they could both to set right the past and to give the country a new and vigorous start for the future."

(*St. Monans*, 13-1-1906).

"In all this there was a lesson which ought to be taken to heart, namely, that in English politics it was the straightforward, the direct, the plain policy which in the long run paid."

(*Henley*, 18-1-1906).

"This country by carrying out the great Liberal principle of confidence in the people and allowing them to manage their own affairs, would have our imperial unity on the broadest, soundest and most stable foundation. It was in this spirit that the new Government hoped to attack other problems of legislation and administration which lay before them."

(*East Fife*, 20-1-1906).

I conclude these declarations by two more of one who though dead is still living in our hearts and minds, and whom Mr. Morley himself has given his immortality in this world.

Mr. Gladstone says :—"It has been providentially allotted to this favoured isle, that it should show to all the world how freedom and authority, in their due and wise developments, not only may co-exist, in the same body, but may, instead of impairing, sustain and strengthen one another. I am deeply convinced that among us all systems, whether religious or political, which rest on a principle of absolutism, must of necessity be not indeed tyrannical, but feeble and ineffective systems and that methodically to enlist the members of a community, with due regard to their several capacities in the performance of public duties, is the way to make that community powerful and healthful, to give a firm seat to its rulers and to engender a warm and intelligent devotion to those beneath their away."

(*Daily News*, 5-5-1905).

The following is one of Mr. Gladstone's latest utterances on the occasion of one of the greatest achievements of his life—Home Rule for Ireland? He said :—

"It is the predominance of that moral force for which I heartily pray in the deliberations of this House and the conduct of our whole Public Policy. . . . There can be no more melancholy, and in the last result no more degrading spectacle upon earth than the spectacle of oppression or of wrong in whatever form inflicted by the deliberate act of a nation upon another nation. . . . But on the other hand there can be no nobler spectacle than that which we think is now dawning upon us, the spectacle of a nation deliberately set on the removal of

injustice deliberately determined to break—not through terror and not in haste but under the sole influence of duty and honour—determined to break with whatever remains still existing of an evil tradition, and determined in that way at once to pay a debt of justice and to consult by a bold, wise and good act, its own interest and its own honour.”

DECLARATIONS OF THE RT. HON. R. B. HALDANE.

“It was their duty to try to govern the Irish people in a sense which was more akin to their ideas and less entirely subordinate to our own they recognised it was a duty binding upon them by every obligation of honour and policy that they should strive to bring the administration of Ireland in harmony with the minds of her people and should endeavour by every means to convert the people of this country to a juster view of their obligations to that unhappy land and to a fuller recognition of their title to administer those things that were their own.”

(*North Borwick*, 23-1-1906).

Now these sentiments and principles apply with manifold force to India to whom the British people are bound to give self-government, not only by rights of birth as British citizens, but also by a “duty binding upon them (the British people) by every obligation of honour and policy” by the most solemn pledges given several times before God and the world.

At Darleuton on 24-1-1906 he said :—

“The breath to the nostrils of the Imperial Organisation was **FREEDOM.**”

I make no comments on these declarations as being the statesmen's own nobody can more realise their full scope, significance and application to India than themselves

All these declarations apply with manifold force to India under the peculiar circumstances of a foreign draining domination under which she is suffering, a circumstance which in its very nature cannot but be evil.

Appendix B.

Mr. Brodrick in his Budget Speech of June 1905, said that the exports from the United Kingdom to India which last year had grown to £40,000,000, equalled the whole of the exports from the United Kingdom to Australia, to Canada and to Cape Colony combined. This statement is misleading. The truth is this.

The true test of comparison of the exports of British and Irish produce to the four countries is what each received per head of population. Australia's population (1903) was 3,931,274. The exports to Australia in 1904 were £17,336,470 giving 11s. 2d. per head. Canada's population (1903) was 5,753,039. The exports to Canada in 1904 were £10,624,222, giving nearly 37 per head. Cape of Good Hope's population (1904) was 12,409,804. The exports to the Cape of Good Hope in 1904 were £12,048,778, giving 100 per head.

Now let us see what India has received of British and Irish goods. India's population (estimate for 1903) was nearly 300,000,000. The exports to India were the small amount of £40,641,277 giving a poor 2·18 per head. It must be remembered that these exports to India include what is received by land through India by the countries beyond the borders. Allowing also for what is received in India for the consumption of Europeans and the small portion of well-to-do Indians, the British and Irish produce would hardly be 2 per head per annum as received by the great mass of the people, who, as Lord Lawrence said, "lived on scanty subsistence." Perhaps millions never see a British article.

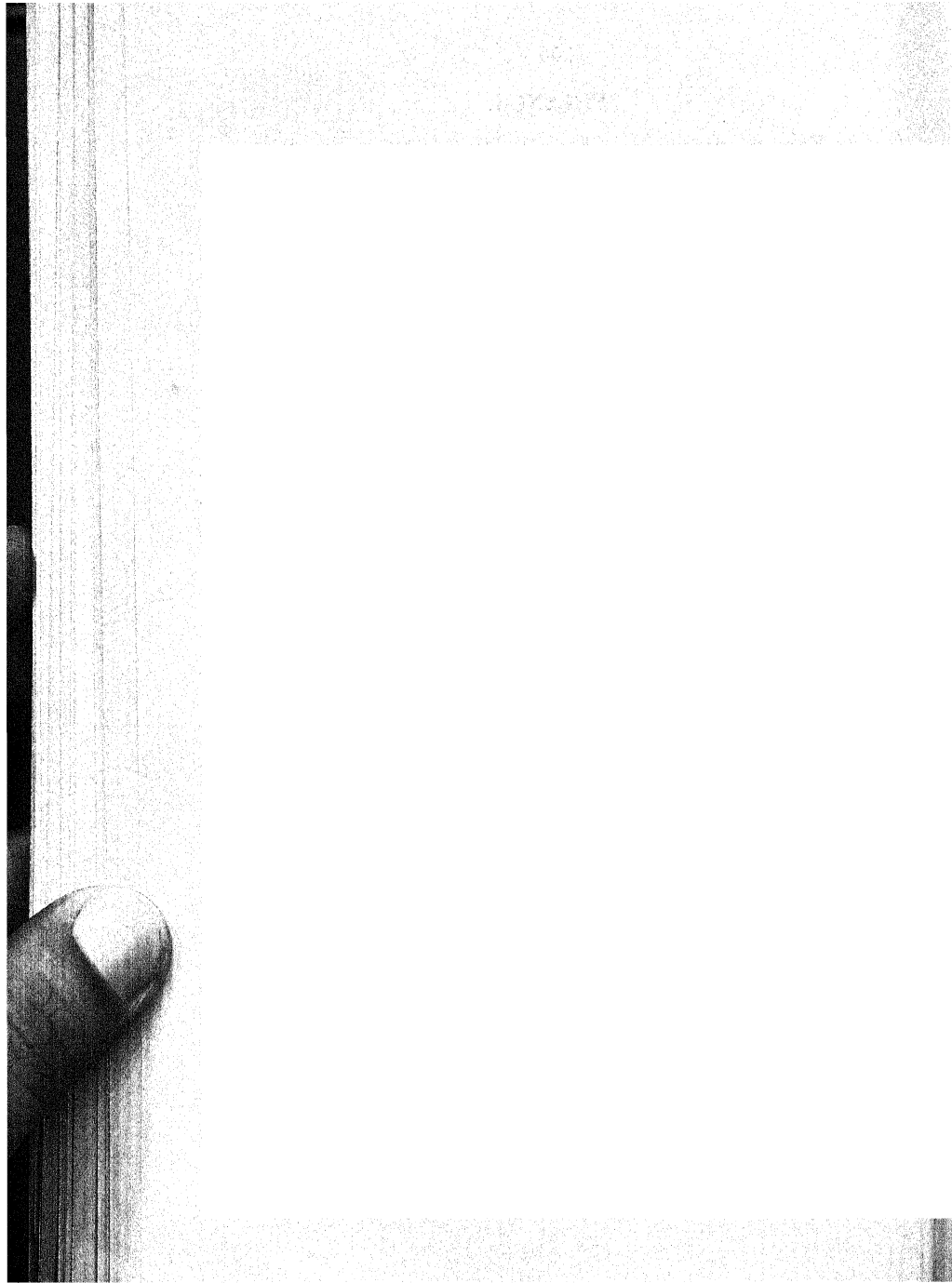
The Colonies within the short time of their development by self-government, are receiving British and Irish goods in spite of their protection against British goods—Canada 37 per head; Australia 88·12 per head and the Cape 100 per head; India takes the very small amount of 2·18 per head after 150 years of British rule and administration with free trade and with entire British control!

What an extraordinary loss this is to the industries, riches and trade of the United Kingdom. Had India been dealt with righteously with self-government like that of the Colonies and had she been able to receive British goods, even 20 per head (let alone 37, 88 and 100) the United Kingdom would have exported to India in 1904 not the poor £40,000,000 but $7\frac{1}{2}$ times £40,000,000, i. e., £300,000,000, as much as the United Kingdom had in 1904 exported to the whole world, which was £300,711,040. What a grand thing it would have been for the wealth, and industries and trade of the United Kingdom! This grand result would have happened if India had self-government; and will happen when India will be a self-governing country.

FINANCE.

From the financial point of view, the employment of Indians under self-government will naturally be on a lower scale of pay than the inordinate scale that exists at present for Europeans. Besides as in the United Kingdom all that is raised by taxation will go back to the people,—the tax-payers—by a hundred channels.

The people of the United Kingdom pay at present for revenue about 67 shillings per head per annum while poor India under the present exhausting drain can pay hardly 7 shillings 6 pence per head and that with much suffering. Now with prosperity by self-government if the people of India would be able to pay only 20 shillings even per head (let alone 67 which the people of the United Kingdom pay) what a growing revenue that of British India would be, viz. £240,000,000 instead of the present poor £78,000,000 exacted from a poverty stricken people. What a market would the 300,000,000 of all India's prosperous people be for the United Kingdom with free trade between England and India? India with such a revenue would be able to supply all her needs in abundance.



THE PARTITION AND BOYCOTT SPEECHES.

The Partition of Bengal.

"That this Congress again records its emphatic protest against the Partition of Bengal and regrets that the present Government, while admitting that there were errors in the original plan, and that it went wholly and decisively against the wishes of the majority of the people of Bengal, is disposed to look upon it as a settled fact, in spite of the earnest and persistent protest of the people and their manifest disinclination to accept it as final."

"That this Congress composed of representatives from all the provinces of this country desires earnestly to impress upon the British Parliament and the present Liberal Government that it will be not only just but expedient that a Committee should be appointed to make a thorough and exhaustive enquiry into the question or to reverse or modify the Partition in such a manner as to keep the entire Bengali-speaking community under one undivided administration and thus to restore contentment to so important a province as Bengal."

The amendment to omit the portion in the second para. of Resolution "a Committee should be appointed to make a thorough and exhaustive enquiry into the question or" proposed by Babu Motilal Ghose was accepted.

Nawab Atikulla of Dacca.

Nawab Khaja Atikulla of Dacca in proposing the resolution said:—"I fell very much honoured by being entrusted with this important resolution. I may tell you at once that it is not correct that the Mussalmans of Eastern Bengal as a body are in favour of the Partition of Bengal. The real fact is that it is only a few leading Mahomedans who for their own purposes supported the measure. To support partition is to lay an axe at our feet; for partition means an enormous cost and the people are not able to bear this heavy burden. At least to save ourselves from this cost the Hindus and Mussalmans should continue to enter an united protest against the measure. I very much regret that the views of the members of the Khaja family of Dacca, to which I have the honor to belong, have been very much misrepresented. It is true that Nawab Salimulla has given his support to the Partition, but that does not prove that the Khaja family is with him in this respect. As a matter of fact that is his own individual view, and that is not the view of the bulk of the Khaja family. The view of the latter is that partition is a great wrong done both to Hindus and Mussalmans, and it should be revoked. Gentlemen, I need not enter into the details

of this question which has already been discussed threadbare. I only hope that the Rt. Hon'ble Mr. Morley will see his way to reverse it. Before I sit down I wish to say a few words with regard to the Hindu-Mussalman question. In this matter I am entirely at one with Sir Syed Mahammed, whose noble utterances have been quoted by our venerable President. There is no doubt Mahomedans and Hindus are the two eyes of India. It is hardly necessary to say that if you injure the one, you injure the other. As a late distinguished Mahomedan said, "We should try to be one in heart and soul and act in unison; if united we can support each other, if not, the effect of the one against the other will tend to the destruction and downfall of both. Gentlemen, that has ever been the policy of the Khaja family of Dacca. My revered grandfather and my revered father preached the same doctrine, and I am only following them when I say the interests of both Hindus and Mussalmans are blended together and they should always act in consort.

The Partition Resolution.

BABU SURENDRA NATH BANERJEA'S SPEECH.

In seconding that Resolution on the Partition of Bengal, Babu Surendranath Banerjea said:—

It is our misfortune—that it should be necessary from year to year to appeal to your indulgence to accord to this question a leading place in your deliberations. I know not how long this necessity will last. But this I do know that so long as the partition is not withdrawn or modified, the Bengalee-speaking community will not be satisfied and that no matter what concessions may be granted in other directions, they will fail to conciliate the people or allay the prevailing excitement. Every now and then we hear of a lull in the agitation, of a subsidence of the feeling which has prompted it. The other day there appeared a letter in the *Times* from a correspondent in India in which the latter was pleased to observe that the agitation was on the wane. We are in the unfortunate position of a patient suffering from a painful disease which has its periods of intermission, but the patient knows no rest or peace so long as the root-cause of the mischief lies ingrained in his constitution. Time blunts the edge of all sorrow. Time is the great healer. But time with his mollifying hands has not soothed our wounds. There may be a temporary cessation of the feeling; but the grief is there, firmly rooted in the depths of our hearts. There is no feeling deeper in the heart of the Bengalee than that which is associated with the home and gathers round the domestic circle. The Bengalee, be he a Hindu or a Mahomedan, feels the strongest repugnance to the breaking up of his home. He resents it with a fanaticism which is religious in its intensity. So does he view with bitter pain and indignation

the separation from himself of his kith and kin by the formation of a separate Legislature and a separate Government. The partition is in the nature of an outrage upon the deepest domestic associations. Call it a mere sentiment—an irrational sentiment if you like—but there it is,—none can ignore it, moving the hearts of our people with a power and intensity to which there is no parallel in the annals of our popular upheavals. Nor is it merely a question of sentiment. The issues are much deeper. They affect the whole of India. They concern what with us is the problem of problems. If it were merely a question of territorial redistribution, all this excitement would be inexplicable. The matter is much more serious than that. The question is whether the public opinion of a great Province expressed with singular unanimity and unequalled emphasis is to be flouted and treated with open and undisguised contempt, and that in a matter affecting the vital well-being of the Province. Thus in another form and under a different name you have the old-old question of the assertion of popular opinion and the vindication of the principle of self-government. It is in this form and in this sense that the question appeals with convincing force to the hearts and consciences of the whole of India.

MR. MORLEY AND PARTITION.

Last year about this time when we discussed this question the Liberal Government had come into power with Mr. Morley as Secretary of State for India. We had never known Mr. Morley in that capacity. We knew him more as an author than as a statesman. We knew him better as the biographer of Cobden and Burke, as the author of *Compromise* than as the Radical politician or the Chief Secretary for Ireland. Many of us had indeed sat at his feet in the sense that we had imbibed from his writings those lessons of political wisdom, dominated by the larger considerations of expediency, which have their roots in the eternal moralities of things. We, therefore, welcomed our political Guru as the controller of the destinies of our motherland. We welcomed him to the seat of the great Akbar in the firm confidence that he would fill it with more than the wisdom and with scarcely less than the beneficence of the greatest of the Mogul Emperors. Perhaps our expectations were pitched a little too high. If that be so, Mr. Morley himself is responsible for it. For, who can read his writings or rise from their perusal without coming to the conclusion that here was a master-figure in the world of thought and action and that his caution was but another name for that temper of mind which gathers in the forces of action, preliminary to vigorous and determined effort. We realized the difficulties of his situation and we were prepared to make large allowances for that undiluted bureaucratic atmosphere which he breathed every moment of his life and in which he

might be said to live and move and have his being. For of all the bureaucracies which govern or misgovern countries, the stiffest, the most reactionary, the slowest to move, the one above all others gifted with the fatal gift of a superabundance of confidence in its own infallibility, is the bureaucracy installed at the India Office. But people expected that a man of Mr. Morley's power with his great influence over the House and the country would rise superior to his environments, assert his personality and vindicate those lofty principles of political wisdom and justice with which his honoured name is imperishably associated. Sir, we have been asked to wait and that by no other than Sir William Wedderburn, than whom there is not a stauncher or a more self-sacrificing worker in the cause of our regeneration. The same advice has been emphasised by another friend of our people whom we all greatly respect but whom I miss on this platform (the Right Hon'ble Mr. Samuel Smith). Wait, we must—what else can we do? Waiting upon the will of our rulers has been our lot for the last three centuries. We shall certainly wait but not in meek submission to the will of our rulers as the decree of an inexorable fate, but with the firm resolve to overcome that fate and to work out our salvation.

ORIENTALS OF THE NEW SCHOOL.

Our rulers must recognise the new spirit, born, it may be, of the huge blunder of the partition, vibrating through our hearts, uplifting us to a higher plane of political effort. We are no longer Orientals of the old type, content to grovel under the weight of an overmastering fate, but we are Orientals of the new school, enfranchised by English culture and influences, revived by the example of Japan, China and Persia; and as Orientals of the new school, we believe, that nations by themselves are made. Yes, we shall wait with patience, but it will not be the patience of inaction, but patience accompanied by a strenuous effort to undo or at any rate modify the partition of Bengal.

MR. MORLEY'S "SETTLED FACT."

Mr. Morley declines to reopen the question on the ground that partition is a settled fact. We in our turn decline to accept it as a settled fact. We decline to accept a wrong—what is admittedly a wrong, a deliberate affront to the public opinion of our people—as among the verities of life and administration. A wrong is a lie. It is opposed to the will of God and the moral order of the universe. It cannot endure. We are resolved to undo it; and aided by the unseen but irresistible forces which help every right cause, we hope to achieve success. Mr. Morley does not seek to justify the partition. He makes two significant admissions. He says that the partition went wholly and decisively against the views of the majority of the people concerned. Further, he admits that there were errors in the original plan. It is

inconceivable how with these admissions he can stand where he is. A little persistent push will dislodge him from it. I admit that a statesman is not bound to be logical. But he is bound to be reasonable, he is bound to be just. He cannot over-ride the paramount considerations of right-dealing. Righteousness exalteth a nation. Righteousness is the very breath of imperial statesmanship. The most reactionary of Indian Viceroy's has told us that the British Empire in India is founded upon the eternal moralities of things. The most reactionary of Indian law-makers (the author of the Sedition Clause in the Penal Code) has told us that a single act of conscious injustice is more disastrous to British rule than a great reverse sustained upon an Asiatic battle-field. A wrong has been perpetrated. It is felt as such by the people—it is admitted as such by the rulers. Not to redress it but to perpetuate it would be a piece of grave injustice to the people and would be disastrous to the credit of British rule in India. It will do more than anything else that I know of to shake popular confidence—the bulwark of thrones and states—in the policy and intentions of the Government. What is a Government for, if it will not redress a wrong? That is its high mission—its sacred function. Liberalism is wedded to progress. Progress involves the unsettling of the existing order of things. A Liberal Minister who declines to redress a wrong on the ground that it is a settled fact does violence to his political creed. What was the Government doing till lately? It was upsetting the educational policy of the Tory Government—unsettling a fact.

Mr. Morley admits that there are errors in the original plan. I take it that partition is to become a permanent institution. It so, are we to understand that they are to find an abiding place in a permanent administrative arrangement, affecting the happiness of millions of our people? The position is so untenable that even the *Pioneer* which is a pro-partition and semi-official journal is constrained to say that in the light of this admission Mr. Morley has no option left to him but to modify the partition. "No question of temporary inconvenience," says the *Pioneer* "can be made an excuse for perpetuating errors, and the right course would be to amend the partition at once."

LARGER CONSIDERATIONS OF EXPEDIENCY.

Mr. Morley's position is thus absolutely untenable. But he tells us that his attitude is determined by the larger considerations of political expediency. What those considerations are he has not told us. He was challenged to state them by Mr. O'Donnell, but he declined to do so. Are we then to understand that they are such as will not bear the light of publicity or the test of scrutiny? If that be so, then the public will not regard them as valid. Differing as I do from Mr. Morley's view, I desire to meet him on his own ground, and I hold that the larger considerations of expediency demand the reversal or modification of partition. Is there a more

important asset to a Government than the contentment of the governed? Why, Sir, in the case of a foreign Government such as ours is, it is an asset of priceless value. Her Gracious Majesty the late Queen-Empress is my authority. In the Proclamation of the 1st Nov., 1858, which represents the highwater mark of British statesmanship of the last generation, she declared that in the contentment of her people lay the strength of her Empire. The partition of Bengal has struck at the root of that popular contentment which is the greatest bulwark of the British Empire in India. It has caused wide-spread dissatisfaction and has alienated the people from the Government. If the good-will of the governed be a factor for the purposes of a wise and efficient administration the Government at least in Bengal has largely forfeited it. There can be no co-operation between the rulers and the ruled in the work of administration with this yawning gulf separating them. Let me cite a case in point. The other day a high officer of the Government, a member of the Indian Civil Service, visited Rajshaye in the new province with a view to found a Co-operative Credit Society. The aid of the local leaders was invoked. They point-blank refused to co-operate with him; the local correspondent of a Calcutta newspaper remarking that the people have lost all confidence in the Government. Lo and behold, this is one of the fruits of partition. Mr. Morley wants new facts to justify his reopening the question. Here is fact No. 1. Let me pass on to fact No. 2. There is a class of our population who have lost all faith in the utility of constitutional agitation. They will not approach the Government with memorials or petitions. What is the good of them all—they say. Here in the matter of the partition we have begged and prayed and protested. But all in vain. The Government will not listen to our prayers. Self-respect demands that we should not have anything to do with a Government, so unsympathetic and so irresponsive to popular appeals. This view may be right or it may be wrong. I for one am a firm believer in the utility of constitutional agitation (a voice cried out, “no”) You may say ‘no’ to the end of your life. You will not convince me that I am in the wrong or that you are right. However that may be, there is the feeling—an utter loss of all confidence among a section of our people in the utility of constitutional agitation. Is it possible to think of a situation more grave? But let us pass on. There is yet another new fact sufficiently serious to attract Mr. Morely’s attention. In some of the eastern districts, Hindus and Mahomedans have hitherto lived in peace and amity. Partition has caused friction and irritation which may deepen and increase.

THE ATTITUDE OF THE MAHOMEDANS.

In this connection I desire to say one word as regards the attitude of the Mahomedan community. When the partition proposal was first broached, the Mahomedan community, with one exception, was opposed to it. Since then what has happened to

bring about a change in their attitude. As a community they have got nothing beyond a few appointments in the ministerial and the subordinate executive and police services. Has the cause of Mahomedan education received a new impetus or are the interests of sanitation better looked after? The Mahomedan community have no reason to be satisfied with the Partition; and as a matter of fact, they do not support it. Here are some facts which conclusively bear out this view. There were no less than 259 anti-partition meetings held on the anniversary of the partition. At 135 of these meetings Mahomedans co-operated with the Hindus in protesting against the partition. The four most important anti-partition meetings were those held in Calcutta, Dacca, Faridpur and Mymensingh. The Presidents of all these meetings were Mahomedan gentlemen of light and leading. I know there were some pro-partition meetings. But they were the work of one man, aided by his Anglo-Indian friends, official and non-official. The official support of the pro-partition agitation is a scandal of the gravest magnitude. The official support of public movements deprives them of all their significance. At the pro-partition meetings held at Dacca on the 16th October, 1905, and again on the 16th October, 1906, high European officials were present. Official wirepullers organized pro-partition demonstrations at Serajunge and Madaripore. Mr. Morley's attention has been called to this matter and in reply to a question asked in Parliament, he said that he had no doubt that the Government of the new Province would enforce the official orders on the subject. We are curious to know how far this has been done. Well, may reactionary officials interest themselves in creating a split between Hindus and Mahomedans. The rising tide of popular opinion is daily increasing in volume and power. The enthronement of popular opinion is only a question of time. Twenty-five years ago, Lord Ripon said from his place as Chancellor of the University of Calcutta that public opinion was destined even in India to become the irresistible and the unresisted master of the Government. There are those who would give worlds to bring about the indefinite postponement of this blessed consummation. We have to guard ourselves against the machinations of these intriguers who are the enemies of Hindus and Mahomedans alike. Speaking for myself as a member of the Hindu community, I desire to tell my Mahomedan fellow-countrymen that we welcome the political ferment, which is noticeable among the great Islamic community in India. We rejoice at their growing aspirations. From us they may expect nothing but sympathy and co-operation; for we recognise them as brothers linked together by an inseparable destiny. Let Hindus and Mahomedans stand side by side on a common platform—may it not be the platform of this Congress—this hallowed spot consecrated by the self-denying labours of so many distinguished and patriotic men—and by mutual effort—it may be by mutual forbearance and mutual charity—work out their common destiny.

AN APPEAL.

I know not what the fate of this agitation will be. For the present the signs are all against us. The future is enveloped in the deepest gloom. The heart of the stoutest may well quail as he sees the prospect before him. For eighteen long months have we carried on this agitation. For how much longer are we to continue it? From the depths of our hearts cries out a voice:—"Oh continue it, so long as the wrong is not righted. Let the banner which you have raised float in the breeze—the emblem of your hope and your triumph; and if perchance the banner should drop from your sinking hands, the God of nations will raise up others in your places who will carry it aloft, and aided by the irresistible forces of Time, which make for justice and progress, they will carry it to an assured if not a speedy triumph." To this inner voice we bow. And we are resolved God willing, to continue this agitation, through good report and through evil report. With us Partition is what Home Rule is with the Irish. For a hundred years, the Irish have fought for Home Rule. For a hundred years they have met with defeat and disappointment. For a hundred years, they have again and again come back to the charge. We mean to imitate the Irish along those constitutional lines which will win for us the sympathy and support of civilised mankind, never yielding, never despairing, possessing our souls in patience with the firm confidence, that as in the physical so in the moral world, the darkest night is often the precursor of the brightest day and holds concealed in its bosom the germs of those golden streaks which herald the advent of the new dawn.

Brother Delegates,—I have a word of appeal to you. We want your sympathy and your support. Will it be extended to us? Say "yes or no," (the whole house shouted "yes" vociferously). I thank you for this demonstration of sympathy, and I beg of you when you go back to your homes to record in your Provincial meetings and in your Provincial Associations your votes of protest against the cruel wrong which has been done to the people of Bengal. Let the Government know that a wrong done to one province is shared by all. The moral significance of such a demonstration, it is impossible to exaggerate. It will constitute a bulwark of strength in our national struggle. It will invest the public opinion of a province with the potency of the national voice of all India. It will intensify the solidarity between province and province by making the participators in their mutual sorrows and anxieties. Therefore, brother delegates, do I with all confidence appeal to you to stand by us in this the greatest struggle in which we have been engaged since we have come under British rule; and to such an appeal made by afflicted Bengal to United India there can be but one reply, and it will be a reply which will voice forth the prevailing sentiment of this great assembly—namely, that we are all

brothers, moved by common grievances, animated by common sentiments, ideals and aspirations, linked together by a common destiny and that as brothers we are resolved to fight for each other's rights and stand by each other in the hour of their darkest misfortune.

The Boycott Resolution.

"That having regard to the fact that the people of this country have little or no voice in its administration and that their representations to the Government do not receive consideration, this Congress is of opinion that the boycott movement inaugurated in Bengal by way of protest against the partition of that province was and is legitimate."

Ambica Charan Majumdar's speech.

Gentlemen, this is neither the time nor the occasion to discuss the details either of the Partition or of the Swadeshi movement as inaugurated in Bengal. The partition has been forcibly carried out by an unsympathetic Government and it has driven the people of Bengal to adopt a system of Boycott of foreign articles by way of retaliation. There is, however, one aspect of the question to which I may be allowed briefly to refer on the present occasion. If the method by which the partition was carried out was arbitrary and unconstitutional, the subsequent methods by which the Swadeshi movement has been sought to be suppressed have been still more objectionable and impolitic. The unfortunate policy which dictated Partition of Bengal and which still influences its operations has undone the labours of a hundred years. The mighty builders of this vast empire sought to lay its foundation broad based upon the affections of the people, and in doing so wisely laid down and religiously followed the principle of armed neutrality in the administration of the country as between the diverse races inhabiting it. The partition and the repressive methods adopted to stifle the Swadeshi movement have completely reversed this policy and effected a wide estrangement between the rulers and the ruled. It is a well-known fact that when the partition scheme was originally promulgated it met with the unqualified disapproval of both the Mussalman and Hindu communities. An idea was then conceived of creating a division by winning over one of these two communities. A sudden love of the Mahomedans was hastily cultivated and a leaning towards the Mahomedan was insidiously proclaimed. (Laughter and cheers). Sir Bampfylde Fuller and his worthy lieutenants in the new province at once took sides against the Hindus. Although there was not a single Mahomedan to complain of any real or supposed disturbance owing to the Swadeshi movement, these political meteorologists, taking a secret reading of the political barometer, at once shifted the flag of an approaching storm and set the whole

machinery of administration in motion in suppressing the swelling tide of the Swadeshi movement by methods all of which were of doubtful legality and some of which were openly pronounced by a competent legal authority to be wholly unconstitutional. (Cries of shame and cheers.) Nothing daunted, the hero of the drama entered upon a systematic crusade against Hindu students, Hindu teachers and even Hindu officers of his own, and went on with his exasperating fad after fad until he rendered his position absolutely untenable, when a slow but cautious statesman took him up in hand and compelled him to finish his romantic career in a tragic end. (Laughter and cheers.) Gentlemen, let me here pause for a moment to offer our most sincere gratitude to Mr. John Morley for the firmness and fairness with which he sought to grapple with a situation at once so delicate and intolerable. True, Mr. Morley has not gone far enough to reach the seat of the disease, but it must be fairly admitted that he has gone beyond what any other Secretary of State would have probably done under similar circumstances. Let us hope that Mr. Morley will yet perceive that what he has done is only a temporary palliative and not a permanent remedy and that nothing short of a proper re-adjustment of the partition can eradicate the evil from which the country is suffering. (Hear, hear.)

Gentlemen, the attempt to alienate the Mahomedan community from the Swadeshi movement at a protest against this partition having practically failed, another attempt is being made to discredit the agitation. There is a cry of a split in the camp raised in certain interested quarters. Perhaps it is the wish that is father to the thought, and well may these birds of ill-omen derive whatever consolation they may from such a reflection. But we do not belong to the alarmist crowd and are not likely to start at our own shadows. It was at a conference held at Burdwan in 1904 that the first note was sounded against what is now known as the mendicant policy, and it was here that the Swadeshi movement went through its first incubation. Taking these declarations as their motto a small section of our young men have been led to discover that the true solution of all our difficulties lies in sullenly and silently brooding over them. These are called the Extreme party and are supposed to constitute a source of danger to the State. I do not understand how they can either effect a split in our camp, or threaten the safety of the empire. The camp is too large to suffer a split by the honest differences of a hundred of its men while the State has already proved itself strong enough with its *regulation lathies* to bravely resist the invasion of a number of unarmed school boys. But do these separatists, or extremists as they are called, really entertain the views attributed to them? I have never had an opportunity of hearing them, but I suppose they are perfectly at one with us

in condemning the partition, they are also equally resolute in their determination to have the partition undone. But they are said to go a step further, or more correctly speaking to fall a step too short. They would have none of our petitions and prayers, memorials and representations. The absolute failure of constitutional agitation seems to have made them sick of it and they would have no more of what is called the mendicant policy, of begging for nothing. As I understand it, theirs is the attitude of disappointment, vexation and despair. (A voice No. No.) Judging by the events of the past few years it is impossible not to sympathise with the sentiment underlying these views. That sentiment pervades the whole nation, with this difference that while the nation still regards constitutional agitation as the only legitimate means at their disposal, these Extremists have apparently had their patience exhausted and would have none of it. Gentlemen, I do not know where to stand. To ailiterate is to become obnoxious, to be silent is to become dangerous. This is surely an awful fix too grim to be humorous. (Laughter) But gentlemen, to discredit the movement it is more than suggested that this is not all, and certain unhealthy ideas and sentiments are also attributed to this Extreme party. If this is so, the nation has a serious grievance against those who may be responsible for this extraordinary development. And in your name I would ask, who is really responsible for the sudden growth of these unhealthy ideas? Not certainly the people who through good report and evil report and in darkness and in despair have throughout maintained an attitude of implicit reliance upon constitutional agitation and who are still prepared to resist all attempts at breaking that attitude. The responsibility rests on the shoulders of an unsympathetic Government which has flouted all opposition, ridden roughshod over the feeling and sentiments of the people, treated all their loyal representations with supreme contempt and are again the loudest in their complaint. But the question of responsibility apart, I do not think that any one but an escaped lunatic in this country could subscribe to the dangerous policy attributed to this new party if you are prepared to call them so. I have said I do not believe in the existence of such ideas anywhere except in the wild imagination of certain interested parties. The right to petition the Sovereign is at once a power and privilege of free nations. The great charter wrested from Charles I and which secured the liberties of Great Britain is known as the petition of Right. It was for this right that Milton wrote and Hampden died. It is a right which boastful Germany has not yet full attained and for which revolutionary Russia is struggling at the present day.

Gentlemen, I cannot persuade myself to believe in the existence of such absurd ideas among serious men anywhere in this country. On the contrary, I read the extraordinary prog.

ress made and the strength acquired by the boycott movement in the restless activity which it has produced in those who seem to be deeply interested in discrediting it. (Hear, hear.) While political bacteriologists are busy making careful and minute observations of unhealthy germs in the body politic philologists are not slow in their investigations as to the hidden meanings of words and phrases perfectly harmless and intelligible in their ordinary acceptance. (Laughter and cheers.) It has been truly observed by a shrew French writer that when John Bull begins to suspect he generally begins at the wrong end. Of course with the shouts of *Bande Mataram* as a war-cry and the commonplace ceremony of *Santi Sechan* as a coronation, the independence of Bengal may well be taken as an accomplished fact against which neither Mr. Morley nor the Anglo-Indian community can have anything to say although we the unfortunate people of Bengal would have yet to suffer another partition, in that my royal friend Mr. Banerjea would still have to effect a delimitation of his frontiers with another independent sovereign in Bengal who has quietly assumed his regal title and ratified his friendly relation with the British Raj. (Loud laughter). Gentlemen, there is absolutely neither rhyme nor reason in all this, and let us hope that those who have invented all these silly stories will shortly find the game not worth the candle. At all events they ought to know that it is most unwise and impolitic to cry "the wolf" when there is no wolf in the field. Gentlemen, as subjects of His Majesty we regard it our bounden duty to inform His Majesty's Government that a grievous wrong has been done to a peaceful and unoffending people, their progress as a nation has been barred, their hopes and aspirations built upon a century's patient working have been cruelly blasted, their earnest and persistent prayers and petitions have all been treated with undisguised contempt, their feelings and sentiments based upon the highest considerations of national development have been deeply wounded and that there is no prospect of their being reconciled to the present arrangement. The boycott was the only legitimate means at the disposal of the people. The verdict of all India is on our side and we in Bengal must continue the movement until the attention of the British public is awakened to the necessity of redressing the grievous wrong which has been done to us. (Cheers).

Gentlemen, my last words are to those bright young faces whom I see around me. My dear young friends, strange as it may seem to you I will not say that I thank you. Thanks are a poor recompense for the singleminded devotion, indomitable courage and earnestness with which you have been day and night in sun and rain working for the salvation of the motherland. Besides, who are we to thank you? The cause is yours, the future is yours and you are having the way to your own salva-

tion and to the happiness of your children and children's children. I have only to ask you to continue firm in your resolve and unswerving in your loyalty to your conscience. Go on working in the cause of the Swadeshi movement. The cause is just and righteous and, if you are true to yourselves, is bound to triumph and completely vindicate itself in the fulness of time (Loud cheers.)

Bepin Chandra Pal's Speech.

Babu Bepin Chandra Pal, who in rising to support this resolution was received with an outburst of cheering said :—

You will have already noted, the significant fact, and hope the reporters of the Anglo-Indian Press will take a note of it,—that my friend the Hon. Mr. A. C. Mazumdar and a humble worker like myself stand here in this Congress not in opposition to one another but we stand side by side, shoulder to shoulder, (loud applause) moved by one common impulse namely :—the securing of the redress (you need not fear, I will not go further) of our political grievances. As regards the resolution which has already been read out to you, you will observe that the word “Boycott” is attached to the word “Movement.” The word Boycott it left alone, severely alone and the only qualification that the authors of this resolution have attached to it, *thati shal move*. Yes, move from point to point, move from city to city, move from division to division, move I hope you will allow me to add from province to province (immense cheering.) The omission of any other qualifying expression in regard to this term Boycott is also significant. It is not, you will observe, a mere boycott of goods ; it is a boycott of something else (applause.) Do not be afraid, I shall go no further ; we have done that something in this part of Bengal, which I have had the honour in my humble way to represent. We know that East Bengal and Assam have not only tried to boycott so far as it lies in our power, British goods but also all honorary officers under and in associations with the government, (great applause.) You will not find one single man among the real leaders of the people in East Bengal associated with the new Lieut.-Governor in his Legislative Council. If you look about you will find this to be the case, these men do not come to the platform, they hide their light in the crowd, and you will see there some of the people, who have resigned their places as honorary Magistrates in Eastern Bengal. So I say that the omission of the words, British goods was intentional. As a matter of fact it was necessary because in Bengal we have not only tried to boycott British goods, but so far as may be also to boycott all honorary associations with the government and it will move from point to point until it reaches God knows where.

The next point is that I do not like the word boycott, and there are some people at any rate who do not like it. I for one do not like it, and I oppose in my humble way the introduction of this term in our politics but it was found out that whatever objections may be taken to the word the thing was exceedingly useful not only economically but politically as well. I cannot within the short space of time that is allowed me enter into details. Most of these details are known to you. We know what we feel on the subject and what especially in East Bengal our people have been able to do by means of this boycott. I will tell you it is not a secret. We in East Bengal believe it and we have proofs of it in the enforced retirement of Sir Bampfylde Fuller (applause). This was due to this boycott. Lord Minto himself suggested, and statesmen are given to admitting truths and facts,—he suggested in his last letter to Sir B. Fuller that an organised attempt was made in Eastern Bengal to make administration impossible and had the repressive measures inaugurated by the government continued in operation in Eastern Bengal matters would have become impossible by now. We are thankful that Sir B. Fuller has gone away,—thankful for the respite but if Sir B. Fuller has gone our boycott has come to remain; and it will remain until every grievance that we have, until every right that we demand is granted, until in one word we realise the highest destiny of our people as a nation in the committee of nations (thunders of applause). At one time I had my doubts about boycott. I have heard objections urged against boycott. The first objection was, an objection to all hatred, I disavow all feelings of hatred and enmity against any man here or elsewhere. We have no time to cherish hatred. It is an active sentiment and all our energies and activities are needed at this moment for a positive service to our Motherland. We have no time, no spare energies to devote to those who profess to be our enemies. We have no time—(loud shouts of don't stop, go no, go on.)

We have no time for our enemies. My time is required, your time is required and the time of every person present is required for services to the Motherland, so let us dismiss hatred from the arena of Indian politics.

Another argument is that the Mahomedans do not support us; but this is not the fact; I speak with some experience about the Mahomedans; not of Dacca but of some other Eastern Districts; I have addressed Mahomedan audiences in different parts of Bengal, and at each single meeting audiences from two to fifteen thousands, and I have always found that they are in favour of boycott. Boycott has done in some cases much more for the Mahomedans than it has done for the Hindus. A great majority of our weavers, are *Johlas* or Mahomedan weavers, who had been obliged to give up their looms, and had taken to agriculture. These men had since the boy-

cott gone back to their looms and are doing more remunerative work since the boycott movement than they had been doing during the last 25 or 30 years. We have undoubtedly improved the economic conditions of the Mahomedan population of Bengal by means of this boycott. I will not take up your time any longer; the Chairman's bell has gone (cries of go on, go on and great up-roar).

I shall retire before two minutes are over if you, gentlemen, will allow me. And now I come to my last word. I have told you that I was at first opposed to the boycott when it first introduced into Bengal; you will ask how came I to be converted. I came to be converted by the results. More than that I came to be converted by the inspiration that is given to all our public movements during the year or year and a half that has been in operation. It is, my dear friends, a divine movement. We may help intend be blessed by helping it, but we cannot oppose it. The car of *Juggernaut* is the car of progress: it moves slowly but is more surely to its own destination. Those who pull the rope of the car calling on God and *Bande Mataram* will be saved. Those who oppose the Car of Progress will be crushed under its wheels whether it be Hindu or Mahomedan, whether it be in Bengal or any other province. You have been asked by my friend and leader who said he was 60 years old, and our leader Babu Surendranath Bannerji (loud applause) has asked you to help us in this matter. How can you do so? We have helped ourselves in the only way in which effective help can be rendered in this matter, and we ask you in the name of God, in the name of your Nation, in the name of the future emancipation of your people to lend your support to this movement now, and when you go back to your provinces see that this thing may proceed from point to point, from city to city, from division to division until the whole of India is able with the fire that brings patriot is and progress in its train.—*Bande Mataram*.

The Second Industrial Conference.



A YEAR'S OUT-TURN OF WORK.

Mr. R. C. Dutt, C.I.E., delivered the following speech on the 29th Dec., 1906, in laying before the Conference, the Report of the First Industrial Conference and the report of a year's out-turn of work, from December 1905:—

MR. PRESIDENT, LADIES AND GENTLEMEN,—

It is my pleasant duty to lay before you the Report of the First Industrial Conference, held last year, at Benares. Along with it, I wish to place before you a Report of the work of the Conference during the year which is about to close. And, lastly, I ask your permission to present you also with a very useful Directory of Indian Industries and Indian Goods which has been published by the Conference office.

The First Industrial Conference was held in December 1905; and, as you are all aware, the first year is a critical year in the life of all institutions. The rate of infant mortality is, I am afraid, very high among our Indian institutions; but you will be glad to learn, our institution shews every sign of a strong healthy and useful life. I ask you all, ladies and gentlemen, to join your good wishes with mine for the well-being of this promising and hopeful child, whom I make over to-day to the fostering care of our new President, the Honourable Vithaldas Thackersey.

Our object at the First Industrial Conference was three-fold. In the first place we wished to collect a body of expert opinions on the different industries of India in a series of papers which would be useful to all of us for reference and for guidance. Our second object was to make our institution, not merely a deliberative body, discussing industrial questions during one day in the year,—but a working body, doing some useful work all through the year. And our third and last object was, not to try and do this work all over the vast continent of India from one Central Office, but to create Provincial Committees in all the large Provinces, to promote, organize, and supervise industrial enterprises, and to compile necessary information.

In fulfilment of our first object we invited gentlemen, who had devoted their time and attention to the study of special subjects, to favour us with their views and opinions, and our invitation met with a most cordial response. The series of papers which you will find in this Report are written by some

of the ablest men in India,—Government servants and private gentlemen ;—and I know of no other handy and popular work, published in India, which contains within the same limits such valuable and practical suggestions relating to Agriculture and Agricultural Banks, Mining and Minerals, Cotton Cultivation and Mills and Hand-looms, Industrial Education and Indian Industries. To mention a few among the papers,—you will find in this volume a most valuable one on the Cotton Industry by the Honourable Vithaldas Thackersey of Bombay, who so worthily fills the chair to-day ; and you will find another on Cotton Cultivation by Raja Pyari Mohan Mukerji of Bengal. You will find interesting papers on Co-operative Credit by Mr. Hope Simpson and Sir Frederic Lely, and papers on Minerals by Mr. Holland and Rao Bahadur Joshi. The late Dewan of Travancore ably explains the necessity of a College of Technology in India ; Mr. N. G. Mukerji writes on Sericulture ; and Mr. Havell and Mr. Chatterton, who have done so much for promoting our Indian Industries, write on Hand-looms, on Chrome leather, on Aluminium, and on other industries. To these, and to all other gentlemen who contributed papers to the First Indian Conference, I take this opportunity of conveying, once more, the cordial thanks of the Conference ; and I believe their collective work will be a most useful guide to us in our labours for many years to come.

Our second object was to make arrangements for carrying on our work all through the year, instead of being satisfied with one day's deliberation. For this purpose we established a Central Office, and we were fortunate in getting so energetic, so zealous, so able a worker as Rao Bahadur Mudholkar to be our Honorary Secretary. He has devoted himself to this great task, and the success which he has achieved within the period of a twelve month, in carrying out our aims and objects is recorded in this volume. Mr. Mudholkar has been ably assisted by his Under Secretary, Mr. Chintamani, an untiring and zealous worker, who has within this year visited the different provinces of India, helped the Provincial Committees, compiled information, and done much to promote our objects. He is peculiarly fitted for this work ; and I believe it is in contemplation to allow him an Assistant in the coming year, so that he may have more time to help in the work which devolves on the different Provincial Committees. I am glad to be able to add that the subscriptions we were able to raise have covered all our expenditure ; and I may remark that three public-spirited men of Baroda State came to our rescue, and subscribed Rs. 500 each, when we were threatened with a deficit.

Our third and last object was to organize Provincial Committees in all the large provinces of India, and you will be

glad to learn that this important work has been done. The Bengal Committee is fortunate in getting Mr. S. R. Das to act as Honorary Secretary, and the Bombay Committee is equally fortunate in getting M. Lalubhai Samaldas to act in the same capacity. An Industrial Association, which had been founded in Madras, consented to work as the Committee of that Province; Dewan Bahadur Krishnaswami Rao of Travancore fame is its President; and Mr. Subramania Iyer and Mr. Hanumanta Rao are its Secretaries. I have only to add that the United Provinces Committee has appointed Mr. Bhargava as Secretary, and the Punjab Committee has elected Mr. Mulkraj in the same capacity. The Provincial Committees have thus been organized, and a beginning has been made for continued and well-concerted work, all through India. It is hoped that, with a greater degree of co-operation between the Central Office and the Provincial Committees, our organization will be able to shew a good outturn of work in the future, from year to year.

So far, gentlemen, I have dwelt on the organisation and work of the Industrial Conference of the last year. But I would like to add a few words on the industrial activity which the whole country has manifested during the year now closing. And, first of all, we must all gratefully acknowledge the grant of five lacs of Rupees, which the Government of India has allotted in the current year's budget for this purpose, one half of which, approximately, is for technical education. It is a small grant, considering the requirements of this vast country; but we acknowledge it with gratitude—as gratitude has been described as a lively sense of greater favours to come.

Our countrymen have also shewn a laudable activity. In Bengal a Technical Institute has been founded, mainly through the liberality of my friend, the talented and patriotic Mr. Palit, whose ill-health we all deplore to-day. The Association for Scientific Education, founded mainly through the exertions of my friend, Mr. Jogendra Chandra Ghose, sent 17 students abroad in 1905, and no less than 44 students this year for technical education. Two or three mills have also been started in Bengal, and the number of Hand-looms has more than doubled within the year, bringing relief to the great weaving population of the Province, and at the same time, meeting the demand of home-made cloths which is increasing all over the Province. I am glad to add that the Indian Stores Limited, for which the country is indebted to the Honourable T. Chowdhri, is now on a sound commercial basis, and similar Stores are multiplying all over the country.

Among the great captains of industry and enterprise in the Bombay Province, the name of the late lamented Mr. Tata stands foremost in the hearts of his countrymen; and the iron and steel company, which he tried to organize, is engaging the attention of his worthy sons. Two Indian Banks have recently

been started in Bombay,—one of them mainly through the exertions of our worthy President, the Honourable Vithaldas Thakersey ;—and an Insurance Company has been floated under the auspices of our veteran leader and patriot, Sir Pherozshah Mehta. New mills have been started in Bombay, Ahmedabad, and other industrial towns in the west of India, and Indian Stores are also multiplying,—one of the best of them having been lately opened by our Grand Old Man, Mr. Dadabhai Naoroji.

Madras has been busy during the year with her Industrial Exhibitions, and has started Dye-works, Weaving Factories, and Candle and Soap Factories. And we are all interested in the future success of the Swadeshi Steam Navigation Company, which we trust will yet triumph over all its initial difficulties, and prove a commercial success.

In Benares, which had the honour of being the scene of the First Industrial Conference, the Silk-weavers have started a Co-operative Association; and several Sugar Factories have been started at Cawnpur, Shahjahanpur and other places in the United Provinces. We all hope that the endeavours of the brother of the Prime Minister of Nepal, to establish a Glass Factory near Dehra Dun, will be crowned with success.

The success which has been already achieved in the Punjab in turning out glass-ware of a superior kind will be attested to by all who were at the Industrial Exhibition at Benares last year, or who have been at the splendid Calcutta Exhibition of the present year. Recently, a Spinning and Weaving Mill has been started at Lahore, a Hand-loom Weaving Company at Jullundar, and a Woollen Manufacturing Company at Amritsar. Indian Stores have been opened all over the Province.

Lastly, the Central Provinces and Berar have been busy with their Exhibitions, and a Spinning and Weaving Mill and other industrial enterprises have been started at Akola.

These, gentlemen, are a few of the indications of a healthy industrial activity which is visible to-day, all over India. The Industrial Conference claims no credit for this activity, for the Conference itself is one of the results of the spirit of the age. There is a movement which is growing and spreading, day by day, over the whole continent of India, which the nation has begun earnestly, and which the nation will not let die. The *Swadeshi* movement is an Industrial Revolution, more far-reaching in its effects than many political revolutions; and history will record in future ages how the people of India in the commencement of the twentieth century effected their own industrial salvation. Without any control over our own tariff or financial arrangements, without any effective voice over our own legislation or our administration,—such as every other civilized nation on earth possesses to-day, and such as we are bound to obtain in the near future,—without any of these privileges which are the

birthright of nations, we have determined, simply by giving preference to our home manufactures, to revive the industrial activity of this vast country, and to improve the condition of our industrial population. The call has gone far from Province to Province, and from village to village; and unnumbered millions are responding to the call with almost religious fervour. The womanhood of India has nobly joined in this patriotic work; and every true Indian, Hindu or Musalman, Parsee, Jain or Christian, co-operates in this *Swadeshi* movement, and exerts himself for the industrial progress of his fatherland. We are yet far, very far from success;—but in our heart of hearts we have taken a solemn vow, to work together towards this great object. And when we have passed away, our sons and grandsons will take up this holy work, and will accomplish what we have begun to day, giving our country her rightful, her ancient place among the industrial nations of the earth.

INAUGURAL ADDRESS.

The Second Industrial Conference opened at Calcutta on Saturday, the 29th Dec., 1906. The following is the full text of the speech delivered by H. H. the Maharaja Gaekwar of Baroda :—

Mr. President, Delegates to the Conference, Ladies and Gentlemen—it was only last month, on my return from a tour in Europe and America, that your able and energetic Secretary, Rao Bahadur R. N. Mudholkar, called on me and conveyed to me the Industrial Committee's unanimous request that I should attend this Conference, and deliver an Inaugural Address. I naturally felt some hesitation in acceding to this request, partly because of the pressure of administrative work owing to my recent return from a foreign tour, and partly because I am aware that there are others who are better qualified than myself to advise you in the noble work which you have undertaken.

But, Gentlemen, your Secretary was not to be put off by these reasons. He pressed me to accede to the request of the Industrial Committee, and was good enough to assure me that by so doing I would be rendering some service to the great cause which we all have at heart. To this argument I felt it my duty to yield. I feel very strongly that to help in the industrial movement of the present day is a duty which devolves on all of us equally.

Whatever be our vocations in life, we cannot be untrue to this duty without being untrue to ourselves and our country. And I feel to-day, as I have always felt and declared, that our interests are one and the same ;—whatever helps and elevates you, helps and elevates us :—whatever retards your progress, retards ours. And furthermore I am strongly convinced that our activities in all different departments of life, political, social and industrial are so correlated that we shall never make any marked progress in one without making similar progress in all.

The three seemingly diverse currents of intellectual activity converge towards the same head-works and feed the same main stream of life. Unless we extend our horizon and take a less parochial view we can ill-understand the value and place of each of these component parts in the great machinery of progress.

Past History.

Gentlemen, I do not propose to take much of your time with an account of the industries of India in the ancient times, but a brief reference to some notable facts will perhaps not be unsuitable on an occasion like this. You are all aware that India was famed for her cotton fabrics from very ancient times ; and antiquarians tell us that Indian cotton found its way to Assyria and Babylon in the remote past. Indigo, which is peculiarly an Indian

produce, has been detected by the microscope in Egyptian mummy cloths, and Indian ivory and other articles were probably imported into ancient Egypt. There can be little doubt that the old Phœnicians carried on a brisk trade with India, and much of the spices and precious stones, ebony, gold and embroidered work, with which they supplied the Western world, came from India.

The Greeks rose in civilization at a later date ; and Herodotus, generally called the Father of History, speaks of Indian cotton as " wool growing on trees, more beautiful and valuable than that produced from sheep."

A brisk trade between India and the Western world was carried on during the centuries preceding the Christian Era ; and as Rome rose in power and importance, and Alexandria became a flourishing mart, the trade increased in volume. Silk threads, sapphires, indigo and cotton fabrics were exported from the mouths of the Indus ; and the important seaport town of Broach, then called Bharukatcha by the Hindus, and Barygaza by the Romans, imported gold, silver and other metals, glass, corals and perfumes ; and exported precious stones, muslins, cotton fabrics, ivory, ebony, pepper and silk.

The Roman Empire declined after the third century.

An Eastern Empire was founded with its new capital at Constantinople, and that place attracted to itself much of the Asiatic trade which used to flow before through Alexandria.

India was the scene of frequent invasions during the centuries succeeding the Christian era, and Scythians and Huns desolated her Western provinces. But a great chief and warrior, known to our literature under the name of Vikramaditya, at last turned back the tide of invasion, and India was virtually free from foreign raids from the sixth to the tenth century. It was within this period that Chinese travellers, Fa Hian, Huen Tsang, and others visited India as religious pilgrims, admire her arts, industries and manufactures, and wrote on the Hindu temples and Buddhist monasteries, which existed side by side in every large town. Hindu traders founded settlements in Java and other islands ; and it was in a Hindu ship, sailing from Tamralipti or Tamlook, that Fa Hian left India. Those of you who have been to Europe, and visited the Continental towns, may have seen images of Hindu gods and goddesses in the Museum of Leyden, taken there by the Dutch from Java, where Hindu religion and learning were introduced by traders and settlers from India.

Venice was the channel of trade with India after the close of the dark ages ; but the glory of Venice departed with the discovery of a new route to India round the Cape by Vasco de Gama about the close of the fifteenth century, and Portugal rose in power and commercial enterprise as Venice declined. In the sixteenth century, all the southern seaboard of Asia, as far as China was practically under the commercial control of Portugal. But the Dutch replaced the Portuguese in the seventeenth century, and

like the latter enriched themselves by the Indian trade. Likewise the English appeared on the scene a little later, and wrested from the Dutch a large share of the Eastern trade in the eighteenth century. It is remarkable that, within the last thousand years, nation after nation in Europe has risen to power and to great wealth mainly through the Eastern trade. Constantinople, Venice, Portugal, Holland and England, have successively been the carriers to Europe of the rich manufactures of India, as the Phœnicians and the Arabs were in the ancient times.

When England obtained territorial possessions in India in the eighteenth century, her commercial policy towards India was the same as her policy towards Ireland and her American colonies. Her aim and endeavour was to obtain raw produce from her dependencies, and to develop manufacturing industry in England. She repressed manufactures elsewhere by unequal tariffs in order to develop her own manufactures. The American Colonies freed themselves from this industrial servitude when they declared their independence; but both Ireland and India suffered. Industries in both these countries steadily declined early in the nineteenth century; manufacturing industries progressed by leaps and bounds in England; and the invention of the power-loom completed her industrial triumph.

Since then England has slowly adopted a fair and equitable commercial policy, and repealed Navigation Acts and unequal tariffs. And to-day England stands forth a pre-eminent free trader to all the world; and this brings me, gentlemen, to the industrial history of India of our own times.

Present Situation.

The triumph of our age: the victory of steam and electricity will always be memorable among the decisive battles of the world. The rise of power-looms, for instance, has been stealing a march over the hand-loom workers, and the numbers employed in cotton weaving in India have declined by 23 per cent., even within the last decade. Even the ginning and the pressing of cotton has so extensively participated in the use of improved machinery that its hand-workers have dwindled by fully 68 per cent. And yet it is this textile industry itself which shows how with intelligent adaptation to the improved methods of art, our Indian Industries can compete with the manufactures of Europe. The Bombay Mills give daily employment to about 1,70,000 factory operatives, while so many as 30,000 more are maintained by the ginning presses. Some forty years ago we had only 13 Cotton Mills in all India. The number rose to 47 in 1867, to 95 in 1886, to 155 in 1895, and to 203 in 1904: and to-day the number of our Cotton Mills is still larger. We had less than 4,000 power-looms forty years ago: the number was over 47,000 in 1904. We had less than 3,00,000 spindles 40 years ago: the number exceeded five millions in 1904. These are insignificant figures compared with

the huge cotton indutry of Lancashire ; but they show that we have made steady progress, and that we may fairly hope to make greater progress in the future if we are true to our aims and our own interests. Our annual produce of yarn is nearly six hundred million lbs. in weight : and it is interesting to note that out of this total outturn, about 30 per cent. is used mostly by our hand-loom weavers.

Gentlemen, it is with a legitimate pride that the Indian patriot marks this silent progress in the Mill and Hand-loom industries of India, which, next to Agriculture, are the largest industries in this land. New mills have been started in Ahmedabad and Bombay within the last two years largely as result of the present *Swadeshi* movement. In the poor State of Baroda too, this progress is marked. For more than twenty years, the State worked a Cotton Mill in the capital town to give an object lesson to the people, and to encourage private companies to start similar mills. The call has now been accepted, and a private company has at last been formed, and has purchased the State Mill from our hands with the happiest results. Recently, a second mill has been completed, and is about to start work, and a third mill is now under construction. More than this, the number of Ginning Factories, and other factories using steam, has multiplied all over the State, and the number of hand-loom has doubled in some towns. All the coarser counts of yarn in the Indian markets are now mostly of local spinning ; an insignificant fraction alone being imported abroad. In the case of yarn of higher counts, however, the local manufacture falls much below the supply of the foreign mill. Muslin and finer fabrics can be imported much more cheaply, and in a more pleasing variety of design and colour, than can yet be locally produced ; and hand-loom of the East, once so far famed for the *finesse* of their farbrics, have now dwindled into small importance. Prints and *Chintz*, from France, England and Germany are still extensively imported to meet not only the local demand, but also the demand of markets across the Indian Frontier in Persia and Afghanistan.

Thus, though there is reason for congratulation in the rise of our textile industries, there is yet greater reason for continued toil and earnest endeavour. We are still at the very threshold of success. Our Cotton Mills produced less than 600 million yards of cloth last year, against over 2,000 million yards which we imported from other countries. Here is scope for indefinite expansion. We exported cotton of the value of 213 millions to foreign countries and imported in return for this raw material, cotton manufactures of the value of 390 millions. We are thus producing only a fourth of the mill-made cloth which the nation requires. And we should not rest till we are able to manufacture practically the total supply needed by our countrymen.

Gentlemen, the remarks I have made about the Cotton Industry of India apply to some extent to the other industries which require the use of steam. Bengal is known for its Jute

Industry, which I believe is increasing year by year; and the number of Jute Mills has increased from 28 in 1895 to 38 in 1904. Northern India and the Punjab have some six Woollen Factories, whose produce has increased from $2\frac{1}{2}$ million pounds in weight in 1895 to $3\frac{1}{2}$ million pounds in 1904, and I have every hope that our countrymen, who have been successful in Cotton Industry, will broaden the sphere of their operations, and to take Jute and Woollen Industries also.

The Silk Industry is one of the most ancient industries of India, but declined like other ancient industries under the repressive commercial policy of the eighteenth and early nineteenth century. Some faint signs of improvement are, however, visible now. Tassar silk is manufactured in many parts of India, and quantities of it are exported to Europe. In Assam, silk still continues to be the national dress of women, and each family weaves silk *sarees* for its own use. In Bengal, some improvements have been recently effected by the adoption of scientific methods of testing the seed. In the Punjab, the attempt to reintroduce the cultivation of silk worms has not been attended with marked success. In Kashmir, the industry is indigenous, and the State is endeavouring to develop it. Much attention is paid to this industry in the advanced and enlightened State of Mysore. And in the State of Baroda, I have been endeavouring to spread and develop the industry. The number of these filatures in India in 1904 was only 75, and the number of Silk Mills was only 11; but much silk is also produced as a cottage industry.

Gentlemen, so far I have confined myself to the textile industries; and I have scarcely time to refer at any length to the other industries of India. Brass and Copper have been used for vessels in India from ancient times, but have been threatened lately by the cheap enamelled ironware of Europe. Aluminium is a new industry, and we are indebted to Mr. Chatterton of Madras for greatly developing it in India.

Recent Geological surveys and investigations have brought to light the rich Ore of Iron which was lying concealed so long in Central India; and there is a great scope for the development of the Iron Industry. Veins of iron ore are believed to exist in several places besides those where they have been yet explored; and if only a few more enterprising companies, like my friend Mr. Tata's, spring up and prospect these mines, they have a hopeful future before them. If the quality of the indigenous coal is only improved and the means of communication made more easy and cheap, so as to considerably reduce the cost of transport, it would appear more profitable to smelt our iron in our own furnaces, rather than import large quantities from abroad. I am glad to find that the able Geologist, who discovered suitable iron ore for Mr. Tata's scheme, Mr. P. N. Bose, has been selected by you as Chairman of the Reception Committee of this Conference. The scheme is still under the consideration of Mr. Tata's son, whom

I had the pleasure of recently meeting in England. There were 89 Iron Foundries in India in 1904, and it is to be hoped that the number will rapidly increase in the near future.

Bengal is rich in Coal Fields, and out of the 8 millions of tons of coal, worth about 2 crores of Rupees, raised in all India in 1904, no less than 7 millions of tons were raised in Bengal. These will seem to you to be large figures,—but what are 8 millions of tons compared with considerably over 200 millions of tons annually raised in England? Our countrymen are engaged to some extent in Coal-mining, though greatly hampered in the endeavour both by want of capital and want of technical knowledge, and I am glad the Indian Government have granted scholarships to some young Indians to learn practical Coal-mining in England. The importance of coal consists in this that its abundance makes every other industry on a large scale possible. Coal and Iron have been the making of Modern England, more than any other cause.

These are the principal industries of India carried on mainly by steam, and for facility of reference, I have put down the figures relating to them and a few other industries in a tabular form below :—

			in 1895	in 1904
Cotton Mills	...	...	148	203
Jute Mills	...	...	28	38
Woollen Mills	...	...	5	6
Cotton Ginning, Cleaning & Press-Mills			610	951
Flour Mills	...	...	72	42
Rice Mills	...	...	87	127
Sugar Factories	...	...	247	28
Silk Filatures	...	...	89	75
Silk Mills	...	...	28	11
Tanneries	...	...	60	35
Oil Mills	...	...	163	112
Lac Factories	...	...	138	128
Iron and Brass Foundries	...	...	64	89
Indigo Factories	...	...	8,225	422

These figures will show you at a glance our present situation in relation to the principal industries carried on by the steam in India. In some industries like cotton, we are only at the very threshold of success, and produce only about a fourth of what we ought to produce. In other industries like Woollen and Jute, we are indebted almost entirely to European capital and enterprise, we ourselves have scarcely made a beginning as yet. In a third class of industries, like Sugar and Tanneries, we have actually lost ground within the last ten years. While in a fourth class of industries like iron, we are still almost wholly dependent on Europe, the produce of our own foundries scarcely supplying any appreciable proportion of the requirements of India. I repeat, there-

fore, what I have already said before :—There is ground for hope but not for joy or elation ; there are strong reasons for earnest and continued endeavour in the future to secure that success which we are bound to achieve if we are true to ourselves.

And there is one more fact which I would like to impress on you in concluding this brief survey of our present situation. A great deal of attention is naturally paid to the Mill Industries of India, and to Tea, Indigo, Coffee and other industries in which European capital is largely employed. We know however, that the labourers who can possibly be employed in mills and factories form only an insignificant proportion of the industrial population of India. Very much the larger portion of that industrial population is engaged in indigenous industries carried on in village-homes and bazaars. India is, and will always remain, a country of cottage industries. Where hundreds of thousands can work in mills and factories, millions and tens of millions work in their own huts ; and the idea of greatly improving the condition of the labourers of India, merely by adding to mills and factories, is only possible for those who form their opinions six thousand miles away. No, Gentlemen, any comprehensive plan of improving the condition of our industrial classes must seek to help the dwellers in cottages. It is the humble weavers in towns and villages, the poor braziers and copper-smiths working in their sheds, the resourceless potters and iron-smiths and carpenters who follow their ancestral vocations in their ancestral homes, who form the main portion of the industrial population, and who demand our sympathy and help. It is they, (more than the agriculturists, or the mill and factory labourers) that are most impoverished in these days, and are the first victims to famines ; and if your *Swadeshi* movement has brought some relief to these obscure and unnoticed millions and tens of millions in India, as I have reason to believe it has done to a perceptible extent, if it has created a larger demand for their manufactures, widened the sphere of their labours, and brought some light to their dark and cheerless homes, then the movement, gentlemen, has my cordial sympathy. Help and encourage the large industries, but foster and help also the humbler industries in which tens of millions of village artisans are engaged, and the people of India, as well as those who are engaged in the work of administration, will bless your work.

Difficulties and How to Overcome Them.

Gentlemen, in saying all this, I do not by any means ignore or minimise our difficulties. We have to recover the grounds which we have lost during the last two centuries. We in our ignorance and poverty have to compete with some of the richest, best trained, and most skilful nations on earth. We with our ancient methods have to habituate ourselves to modern ways, to adopt modern inventions, and to beat those modern

nations who made those inventions. It is a duel with Western nations with weapons of their own choosing; and with those weapons with which we are still unfamiliar, we must face and conquer those who are past masters in their use. With the produce of our infant mills and our infant iron foundries we must oppose the overwhelming flood of manufactured goods which England, Germany and America are pouring into India.

The danger of extinction with which our industries are threatened is therefore imminent. Keep to your conservative methods, cling to your orthodox ways of work, and your industries must perish. Such is the inexorable law of the survival of the fittest, and such the admonition which a true Swadeshi movement ought to give you. If the rush of the steam engine and the whiz of electricity, combined with cheap and easy means of transport, have succeeded in dumping your bazaars with the cheap and attractive products of foreign marts, rise to the occasion and learn how to withstand this inroad with intelligent anticipation and skilful adaptation. Learn to force nature into a corner; accost her and bring out her inmost secrets. Harness her powers, tackle her energies, and make of her a handmaid unto man. Work nature to the relief of man's estate. Any competition between skill, capital and organised enterprise on the one hand, and ignorance, idleness and poverty on the other, can only have one result. Learn to combine and co-operate; learn the value of time and the use of money, and the chances of a fairer fight will eventually require all your efforts.

Swadeshim can be a genuine economic force under the above conditions. It can be a potent weapon of usefulness if properly understood. There is no economic fallacy in that Swadeshi creed that aims at improving the indigenous arts. The genuine Swadeshi ought to secure the maximum of production at the minimum of cost. Patriotism demands that the greater cost and the slight discomfort of using indigenous goods should be cheerfully put up with at the outset. But remember that no such movement can be permanently successful unless it involves a determined effort to improve their quality and cheapen their cost, so as to compete successfully with foreign products. The most rigid economist will then have no flaw to find in your Swadeshi armour.

A single instance of the pitiable straits to which our industries have been reduced, on account of the difficulties mentioned above, will suffice. The export trade of Indian cane-sugar has now become almost a matter of past history. The invasion of German and Austro-Hungarian beet-root sugar has driven away Indian sugar from its own stronghold. In spite of the imposition of countervailing duties and extra tariffs, the bounty-fed sugar from Europe beats the Indian refiner hollow on his own field; and it is curious to observe how the cane-sugar

of India has suffered in the struggle. The reason is not far to seek. Laws can cure only artificial anomalies; the levy of extra duties can countervail only the advantage of bounties and subsidies; but what can remedy causes of mischief that lie deeper, ingrained in the very constitution of the Indian grower and inherent in the very conditions under which the Indian refiner has to work? The demand for consumption of Indian sugar is large enough; it is even larger than the local refiners can supply; yet the cost of production is so excessively inflated that it pays more to import the cheap beet-sugar, grown fat on foreign bounties, than to bring the products of her own growing into her markets. The growers and refiners pursue a process involving extravagant waste of raw material; and ignorant of the latest inventions of science or art, they adhere to the methods inherited from their sires with a hide-bound orthodoxy.

The same deficiency in improved methods and perfected machinery has also led to the ruin of the Tanning Industry of Madras. The curing and tanning of skins by an improved process in America has been found more suitable and more economical than the purchase of skins tanned in India. Similarly the manufacture of synthetic indigo, like other coal-tar preparations, has effected a revolution in agricultural chemistry; and the quantities of artificial indigo that German factories have dumped into the markets of the world at very cheap rates, have a very depressing influence on the indigo trade of Bengal. The exports of indigo which in 1895 amounted to about 53 millions in value, dwindled down to the low figure of 6 millions 10 years later, and the decline has been so rapid that it has been a cause of alarm to an optimist of even a thorough Micawber type. Dyes of no less value than 75 lakhs of rupees were poured into the Indian vats from Germany, Belgium, and Holland in 1905; and these products of Aniline and Alizarine dyes have completely ousted the Indian dyers from their own markets.

It thus becomes imperative on all of us to endeavour to minimise this helplessness and enrich the industrial resources of our country. The trade returns of India are an instructive study. They tell us that in 1905, fully 69 per cent. of our exports were represented by bulky agricultural produce, which gave no employment to local skill and capital, save that employed in tillage. With regard to the total imports in that year on the other hand, fully 59 per cent. of the entire amount represented manufactured articles, with reference to which we did not know how to supply our own wants, and had to depend upon foreign skill, foreign capital, and foreign enterprise. A fair criterion of the industrial development of a country may safely be sought in the proportion of its exports of manufactured goods to the export of raw material from the country; and secondly in the proportion of its

imports of raw material to the imports of made-up or finished goods. The industrial prosperity of a country may be said roughly to vary directly with its exports of manufactures and imports of raw materials, and inversely with its exports of raw produce and imports of manufactured goods. This is a safe and reliable canon of industrial economics. One more sad and prominent feature of the foreign trade of India is the constant excess of exports over imports which is not conducive to the prosperity of the people.

Our serfdom to foreign capital and to foreign enterprise can scarcely be more complete. Our Railways are financed by capital from Europe. Our Mines are exploited by savants from America, and even in our daily household needs our dependence upon products of foreign marts continues from day to day. We are being fed and clothed, diverted and entertained, lighted and washed, warmed and comforted, carried and housed, by the foreign artisan. Our arts and industries are standing to-day on the brink of a precipice, and are threatened with imminent extinction. The problem of saving the country from this perilous plight, and emancipating her from economic slavery to the nations from the West, has become the one topic of absorbing interest; and to find out a cure for this malady has become the one anxious thought of every patriot, and of every statesman. You, gentlemen, have already bestowed your earnest attention to this subject, and I need therefore only make mention of the industries which appear to me to be capable of great progress in the immediate future. The list is appended below :—

1. The Textile Industry.
2. Carpentry and other Wood Work.
3. Iron, Copper and Brass Works.
4. Work in Gold and Silver Jewellery.
5. Masonry and Stone Works.
6. Pottery and Brick and Tile Making.
7. Dyeing.
8. Tannery and Leather Works.
9. Rope Weaving.
10. Cane and Bamboo Works, Mat Making and Basket Weaving.
11. Glass Works.
12. Turnery and Lac Works.
13. Horn and Ivory Carving.
14. Embroidery.
15. Sugar Refinery.
16. Tobacco Curing, and
17. Oil and Flour Mills.

Out of these industries we might select, to begin with, those for which there is a large demand in our home markets, and whose raw material we have been at present exporting in

ship loads for working them into finished products abroad. In the place of large exports of raw vegetable products, our endeavour should be to send out large cargoes of manufactured and finished goods. In 1905 we exported oil seeds of the value of 106 millions of rupees, and imported oil of the value of 22 millions. Our Oil Factories in the Bombay Presidency are said to have supported only 76 operatives at the last Census. There is an indefinite scope for the expansion of this manufacturing industry in the country. Oil presses have diminished by 47 per cent. during the last decade, as it was found more profitable to export oil seeds, and import pressed oil from abroad, than to press it at home by crude and antiquated processes. Besides, as Dr. Voelcker has pointed out to us, to export the entire oil-seed is to export the soil's fertility.

Moreover, every year we export large quantities of wheat and other grain to be ground in foreign mills and import large quantities of flour for our use, while the Wheat-grinding Mills in the Bombay Presidency afford no employment to more than 78 operatives as the figure for the last Census inform us. These are instances of the low state of our industries and of the difficulties under which they suffer. It should be your aim and endeavour to face and conquer these difficulties, and a wise and sympathetic legislation should help your effort and lead you to success.

Four years ago, I made some remarks at Ahmedabad which with your permission, I will repeat to-day.

"Famine, increasing poverty, widespread disease—all these bring home to us the fact, that there is some radical weakness in our system, and that something must be done to remedy it. But there is another and larger aspect of the matter,—and that is that this economic problem is our last ordeal as people. *It is our last chance.*

Fail there, and what can the future bring us? We can only grow poorer and weaker,—more dependent on foreign help. We must watch our industrial freedom fall into extinction and drag out a miserble existence as hewers of wood and drawers of water to any foreign power which happens to be our master.

• Solve that problem, and you have a great future before you, the future of a great people, worthy of your ancestors and of your old position among nations."

These are words which I spoke at Ahmedabad ; and I repeat them to-day, because we feel the importance of them, perhaps more than we felt four years ago. We are at a crisis in our national history. The time has come when we must make arduous and united endeavours for securing our industrial independence or we shall sink again perhaps for centuries to come. We must struggle and maintain our ancient position among the industrial nations of the earth, or we shall be betraying a sacred trust, and be false to our posterity.

I am sure you will not accuse me of exaggerating the gravity of the present situation. I am sure you all feel, as I feel, that if we do not, at the present critical time, free ourselves from that industrial serfdom into which we have allowed ourselves to sink, we have no hope for the future. This, as I said before,—is our last chance.

Exhibitions and Conferences.

And now, gentlemen, you will permit me to say a few words with regard to the work you have undertaken, and the methods by which it can best be done. At a critical juncture in our country's industrial history, the Indian National Congress conceived the happy idea of having an Industrial Exhibition in connection with their annual gatherings. From the very first, the Indian and the Provincial Governments rendered every assistance in their power to make these Industrial Exhibitions a success; and I may add that all classes of the Indian population,—Hindus and Mahomedans, Englishmen and Parsees, merchants and manufacturers, graduates, rich landlords and humble citizens, have worked harmoniously towards this common object. These annual Exhibitions fulfil a double purpose. First they inspire manufacturers with healthy emulation, and enable them to make the products of the different provinces known to all India; and in the second place they enable traders and dealers in articles of daily use to obtain accurate information, and collect articles from all parts of India for the use of purchasers in every province and town. These Exhibitions have been a success; but let us not deceive ourselves. Compared with the wealth, the variety, the magnitude of Western products as I have seen them abroad, the results we have achieved here are meagre indeed. An Exhibition like this simply serves to emphasize our backwardness in utilizing the resources at hand. Let us never be satisfied until we attain a standard of perfection that will bear comparison with the Western World. With the sympathetic co-operation of the Government, and the quick intelligence of our people, there is no reason why such a result may not be achieved within a generation or two.

Last year, gentlemen, you took a new departure. Not content with these annual Exhibitions you held an Industrial Conference, and the First Conference was held under the guidance and Presidentship of my Revenue Minister, Mr. R.C. Dutt. The Conference arranged that its work should proceed all through the twelve months instead of being transacted once in the year. It appointed Provincial Industrial Committees at Calcutta, Bombay, Madras, Allahabad, Lahore and Nagpur. And it also appointed a permanent Secretary and Under-Secretary with Head-quarters at Nagpur to compile information, to carry on correspondence, and to help the Provincial Committees in their work, all through the year. I am glad to find

that this central establishment has not gone to sleep over its work: within this closing year the Secretary and Under-Secretary have collected subscriptions which have more than covered the year's expenditure; they have published in a handy form a report of the Conference, embodying all the valuable and instructive papers which were read at the time; and they have compiled a Directory,—not complete or exhaustive by any means but a fair beginning—describing the different industries in the different parts of India. They have also published a very interesting Report of the work done during this year in all parts of India.

Gentlemen, all this is a good out-turn of a first year's work,—but you should not be satisfied with this. A greater progress is expected from you in future years. The weak point in the Conference organisation seems to me that the Central Office is not in sufficient touch with the Provincial Committees, and is not able to render sufficient help to those committees to develop the industries of the different provinces. Besides Provincial Committees, you require District and even Town Associations for closer touch with the masses. India is a country of vast distances; and it takes more than a day and a night to travel from Nagpur to some of the Provinces. While the Central Office at Nagpur can do much to help the outlying provinces, the provinces can do more to help themselves. By such harmonious co-operation towards a common object, I hope to see the work of the Industrial Conference show a continued progress from year to year. A central organization is needed to co-ordinate all the endeavours that are being made in all parts of India to promote home industries; and the Industrial Conference with its central establishment and Provincial Committees was not established a day too soon.

General Education.

And now, Gentlemen, I desire to place a few practical suggestions before you, such as from my own knowledge and experience, occur to me. The first, and the most important means of promoting our Industries is to spread general education amongst the masses. Great and far-reaching changes might be made in the educational system of the country, and I am of opinion that no ultimate solution of our problem will be reached until schools have been provided in every village and education is taken to the very threshold of the people; until in fact, education at least in its primary grades has been made free and compulsory throughout the land. I am, indeed, gratified to learn that the Government of India has already under consideration the policy of making primary education free.

Compulsory Education.

The experiment of free and compulsory education is a novel one in this country; and yet its novelty must not scare us from

our duty. I am not, indeed, prepared at this time to recommend the example of some of the socialistic communities of the West in providing free breakfasts, free baths, free boots, and everything else but free beds. I have, however, endeavoured to introduce compulsory education throughout the State of Baroda, and hope to see my people benefited by it. The measure was being worked with satisfactory results in one part of the State for a number of years. Emboldened by the success of this experiment, I have decided to make primary education compulsory throughout the State, and absolutely free.

Technical Education.

Of scarcely less importance at this time of the day is the need for Industrial Education. I must confess that it is my recent visit to Europe and to America that has impressed me most with immense importance of technical education in promoting the industries of nations. I may state without exaggeration that education has undergone a complete revolution in the West within the present generation. The great armaments of the Western nations, their vast armies and navies, do not receive greater attention and greater solicitude in the present day than that education in industrial pursuits which benefits them for the keener struggle, which is continually going on among nations for industrial and manufacturing supremacy.

Among the nations on the continent of Europe, Germany takes the leading industrial enterprise; and among the many technical institutes of that country the King's Technical High School at Berlin is the most famous. A large staff of professors teach over 1,500 students, and applied chemistry in oils and colors as well as dyeing, bleaching, printing on cloths and silks, and leather tanning are taught on a scale unequalled in any other country on the Continent.

France is endeavouring to foster her industries and manufactures in numerous institutes. The *Museedes Arts et metiers* of Paris has an extensive collection of machines and models of machines, and Science and Arts classes are held there on important technological subjects. The French Government manage the Sevres Royal Porcelain Factory and the Gobelines Tapestry Manufactory; and frequent exhibitions are held every year in the Grand and Petit Palais of Paris.

Austria is not far behind, and Vienna has technical schools on a smaller scale each teaching some branch of a technical art. Italy has her technical academies; and a polytechnic institute, planned after the Cassanova Institute at Naples, might serve anywhere to collect the best craftsmen and the most promising apprentices under the same roof and extend the moral influence of the teacher to the pupils. All the experts of art would be collected there, and interchange ideas about their trade deficiencies and trade difficulties.

In London, the City and Guild's Technical College, the County Council's Schools of Arts and Crafts under Principal Lethaby and the several Polytechnics, are among the many institutions where a practical training in arts and industries is imparted to the people.

The new Universities of Manchester, Birmingham and Leeds pay special attention to technical education, as the older Universities of Oxford, Cambridge and London take up liberal and classical education. The Municipal School of Technology at Manchester is a monument of the enterprise of that great manufacturing town, and teaches Mechanical, Electrical, Municipal and Sanitary Engineering, Technical Physics, Industrial and general Chemistry, Bleaching, Dyeing, Printing and finishing of textiles, Paper Manufacture, Metallurgy and various other subjects. Some students from Baroda are engaged in the study of alcohol and alkali manufacture and plumbing and sanitary engineering, in this school.

But of all the countries which I have recently visited it is America where I found the highest development of Industrial Education. Every single State in the United States has a State College where technical education is given to students *absolutely free*. No fees are charged in these State Colleges, because the proper training of citizens in these technical arts is considered a matter of national importance, and lands and annual grants are assigned by the States for the maintenance of these colleges. Every State College teaches Agriculture and Engineering, and also gives some training to the students in military tactics. Other subjects are also taught according to the resources of these colleges.

Besides these State Colleges, there are some 43 privately endowed Technical Institutes all over the United States, where Engineering is taught in all its branches: Civil, Electrical, Mechanical and Marine. Architecture, Drawing, Modelling and Textile Industry are also among the subjects taught. The great Institute of Technology at Boston with its 2,500 students, the Armount Institute at Chicago with its 2,000 students, and the Pratt Institute at New York with its 1,500 students are the best known among these privately endowed Techninal Institutes.

I need hardly add that the great Universities like Harvard, Yale and Columbia also teach Engineering in all its branches; and what will surprise you more, almost every High School has classes for Manual Training, comprising Carpentry, Smithy and Machine Shop.

I have not yet visited Japan, but we all know what Japan has done within the lifetime of one generation. Her victories in the battlefield have lately brought that wonderful land among the foremost nations on earth; but the victories of Nanshan and Mukden are not more brilliant than the triumphs of her in-

dustries achieved by a system of technical education which leaves very little to be desired.

Manual Training.

My second suggestion to you is that, besides establishing Technical Schools, you should endeavour to introduce some manual training in the ordinary schools. The training of the eye and of the hand at an early age is useful to all,—even to those who have not to support themselves by manual industry in life. Early lessons in drawing and modelling, simple instructions in carpentry and smith's work are good for all students in all ranks of life. Physicians and Psychologists tell us that such exercises, by introducing a variety in the course of studies really refresh and help the brain and make boys and girls more capable of acquiring both learning and arts. And moreover, to attach some industrial classes to our ordinary schools would have the healthy effect of giving a complete and not one sided education to our children. The richer classes would be brought more in touch with the humble industries; the poor classes would acquire that skill and facility in handling tools which can be only acquired at an early age; all people in all branches of life would be impressed with the dignity of manual labour more than they do now in India; and your great endeavour to promote the industries of the land would be greatly helped when the nation receives an elementary technical training in schools. At the same time it is necessary to bear constantly in mind that no amount of specialized training in manual arts can fill the place of that liberal education and general culture which should serve as the necessary substratum for all kinds of learning. Technical training is a supplement, but not a substitute, for general education, and should never be turned into a fad.

Education Abroad.

I have tried to impress on you, gentlemen, the importance of founding Technical Schools, and of introducing manual training in our ordinary schools, throughout India. Years will, however, pass before this can be done on an adequately extensive scale, so that India can take her legitimate place among the nations of the earth in industrial education and mechanical inventions. It follows, therefore, that, for years and perhaps generations, you must send your young men to Europe, America and Japan for that complete industrial training which they cannot yet receive at home. Make no mistake, and let no time honoured prejudices deter you from travelling to other parts of the earth, and receiving that new light, that new culture, those new ideas, which even the most gifted and advanced nations, always receive by mixing with other nations, and which India needs perhaps more than any other civilized nation. The healthy results of foreign trav-

els, and of comparing notes with foreign nations, are already manifest in India in every department of life within the last fifty years. Nothing impressed me more upon my recent return to India than the changed attitude of many of my countrymen towards foreign institutions. Men of all ranks have been eager to learn my impressions of Western nations. Such a spirit of inquiry is always healthful if it proceeds from a sincere thirst for knowledge. I was much interested in learning while in America that some two or three thousand students every year go abroad to absorb the best of European methods in Education and in Commerce, while the National Government sends men to all parts of the world to study the products of other lands. England, Germany and France, with all their commercial prestige, do not hesitate to send inquirers to foreign parts. Coming nearer home, we find that hundreds of Japanese young men complete their education in France, Germany, England and America. Such is the desire for knowledge, and the whole heartiness of the latter, that not only do they acquire a special education in whatever subject they may be engaged, but they also provide themselves with the means of livelihood not shrinking from the humblest occupations of life.

Japan profited most by sending out her youths to the seminaries of Europe. She owes her present greatness to that illustrious band of her scholar statesmen, who imbibed the first principles in the science of politics and the art of Government at the Universities of Gottingen and Leipzig. She is to-day the mistress of the Eastern seas because of her student sailors, who acquired their first lesson in naval warfare in the docks of Tilbury and Portsmouth. Her battles are fought and won by her soldiers who got themselves initiated into the mysteries of manoeuvring and the secrets of stratagem on the plains of the Comdè-Mars and Rastadt. And she bids fair to assume the supreme place in the trade on account of her scholar financiers, who have rubbed shoulders with bankers in the counting houses of London, Berlin and New York. Has the world ever seen a nobler instance of young men architecturing the fortunes of their motherland. Can we conceive a higher example of patriotism for India's sons to emulate? Let us follow their spirit of self-sacrifice and devotion; let us hold up their ideal of national unity and social equality learn eagerness to acquire the newest methods in all walks of life; imitate their perseverance and patient toil; and we may yet save the fortunes of our country.

I have learnt with pleasure that an earnest and patriotic worker of this province, Mr. Jogendra Chandra Ghose, the worthy son of a worthy father, has organised a scheme for sending young men to Europe and America for education; and that a large number of students have already been sent in accordance with this scheme. Nothing gave me greater pleasure, while abroad, than coming in touch with several Bengalees who

were studying in Europe and America. Although far away from India, they had the kindest and most patriotic feelings for their native land. India is to be congratulated in having such men. This policy has also been pursued by the State of Baroda for many years past, and young men, educated in Europe at State expense, are now serving the State with credit, are finding profitable employment in other parts of India. Several young students have lately been sent to England and Germany, America, and Japan; and a scheme is now under consideration to send a limited number of students at regular intervals, mainly to learn the methods of modern industry.

Gentlemen, India to-day is at the parting of ways, and there are great possibilities before her. The people of Bombay for instance are looking forward to the use of Electricity generated in the Western Ghats, for working their mills. The people of Madras are looking forward to the experiments made in "tree-cotton." All India looks forward to the happiest results from the Research Institute for which we are indebted to the late lamented Mr. Tata. There is stir in the air; and the people are showing signs of awakening. This is hopeful; but let us not forget that years of patient toil are before us, that it is only by patience and perseverance, that we can even succeed in competing with the West in industrial pursuits. We need the spirit of determination, of courage, of confidence in ourselves and in each other; we need to distinguish between essentials and non-essentials, between the spirit that vivifies and the letter that kills. Let our energies be not distracted in small things.

I now desire with your kind indulgence to add a word on the lessons that seem to me to arise from the experience of different nations—lessons which are pertinent to India at this juncture. Turning to ancient Egypt, once the centre of the most advanced civilization of the time, we discover that vast resources—agricultural and mineral—are not alone sufficient to produce a cultured and permanent civilization though the foundation of all stable civilizations must fall back in the last analysis upon the natural resources of the country. Egypt in the ancient time had abundant resources, but, failing to note, the value of human life, failing to conserve the interests of the working masses, she sank from the pinnacle of power and culture into political servitude and academic decay. The nation that despises its humblest classes, that provides for them no opportunity to rise in the social scale and in self-esteem is building its house upon the sand. The wealth of a nation is the qualities of its manhood.

Greece fell from her eminence not from any failure of philosophical or æsthetic or political insight; in these directions she has been the chief source of inspiration for the whole Western World. Pericles, Plato and Aristotle are still household.

names in the West. Athens faded away like a fragrant memory because she failed to look to the economic bases of her prosperity. Had she taken pains to utilise her splendid maritime location for the development of commerce and industry; had she confided her commercial affairs to her freemen instead of her slaves; had she applied the sagacity of her statesmen to the formation of a sound fiscal policy; the story of Athens might have had a different *denouement*. But she wasted her mineral resources, and expended large sums in the erection of great temples of worship and art and learning. Far be it from us to suggest any criticism against a civilization which has been the fountain head of all subsequent growth in the culture of the West. I would simply point out that without a permanent and stable economic policy, no civilization, however enlightened, can long endure. This is the message of ancient Greece to modern India. Be careful of large expenditures either individually or collectively which are unproductive. Bid her people forget their caste and tribal prejudices in the common effort to uplift the fortunes of India; bid them find expression for their religious enthusiasm in practical co-operation for the uplifting of humanity—of the human spirit in the temple of God. Bid them be free men, economically, socially, and intellectually; and no power under Heaven can long keep them in servitude.

Rome, too, had its lesson for India. In the complex and far-reaching series of disasters, which led to the downfall of Rome, it would be difficult indeed to designate any one factor as the premier cause of the catastrophe. But of this we may be sure, that the highly centralised and paternalistic Government which developed under the later Cæsars, was a potent cause of weakness to the Empire. Private initiative and individual responsibility gave place to State operation of manufactures and industry. Insufficient currency and military oppression drove the husbandman from his plough and the merchant from his counter. The people looked to the Cæsar for corn, and out of the public treasury the hungry were fed, if they were fed at all. The Emperor ruled by force of arms; manufactures were operated by a system of forced labour under the strictest surveillance of the State; the civilian was forced into idleness and vice; the masses into pauperism and dejection. The national spirit decayed, and Rome fell an easy prey to the ravaging holders from the North.

At this crucial period in India's emancipation, we shall need to keep constantly in mind the failure of Rome. No permanently sound and stable development can occur unless we take pains to educate the masses of our people to a sense of their paramount importance and dignity in the social structure. I conceive it to be the prime duty of the enlightened and well-to-do amongst us to rouse, to stimulate, and to educate the

lower classes. We should help them to help themselves. But ever let us beware of paternalism. Not charity but co-operation is the crying need of the hour.

Let our people as rapidly as possible be educated in the principles of economics, and let special pains be taken for the development of an honest, intelligent, *entrepreneur* class, who will be content to organise and manage our new industries without sapping their life by demanding exorbitant profits.

Ancient India too has lessons for us. I have already spoken of India's rich products and her brisk trade with the West in ancient times. But her mechanical inventions were slow because mechanical work was left to hereditary castes, somewhat low in the scale of society. Our sculpture does not compare favourably with the sculpture and architecture of ancient Greece, and our mechanical progress does not keep pace with the mechanical inventions of modern nations because our intellectual classes have been divorced, for centuries and thousands of years from manual industry, which has been left to the humbler and less intellectual classes. In literature and thought we need fear no comparison with the most gifted nations on the earth. The genius for craftsmanship is also among the people, as is evidenced by the ingenuity and the skill of our artisan classes. Make industrial pursuits the property of the nation. Instead of the exclusive possession of castes let sons of Brahmans and of learned Moulvies learn to use tools in their boyhood; let every graduate, who feels a call towards mechanical work, turn to that pursuit in life instead of hankering after salaried posts; and I am convinced the national genius will prove and assert itself in industries and inventions as well as in literature and thought. Turning to the Western world of modern times, we discover lessons of the utmost importance for India at this time. As I look back over the last several centuries which have raised the nations of the West from the darkness of medievalism to their present high degree of civilization, it seems to me that four historical movements are plainly discernible as important factors in that development.

The first movement to which I refer is his capitalistic programme of the last few centuries. I do not need to dwell before such an audience as this upon the advantages of a capitalistic organization of industries, with its attendant systems of credit, banks and exchanges, with its economy of production and its facility of distribution. In the scientific application of capital we still have many things to learn from the nations of the West.

For this reason I am firmly convinced that we need to devote large sums to the founding of chairs of economics in our colleges, and to the training of our young men in the subtle problems of finance. Let the brightest of our young patriots be

sent to Western Universities to master the principles of economic policy.

The second movement in the West is the taking of social, political and commercial affairs, which are purely secular in nature, out of the hands of the priests. In the 13th century the Church of Rome and her minions dictated not only matters of religious import but reached out in many directions to control all the relations of life, both individual and collective. For three centuries the popular will struggled against the secular tendencies of the Church, until led to open revolt by Martin Luther. Since that revolt the principle has been firmly established, and is held with special vigour in America, that the realm of the Church is in matters of moral and metaphysical import, and that social, political and commercial relationship must be left to the individual consciences of those who participate in them. And in this connection, I merely desire to point out that in so far as India's religious ideas tend to keep many of our brightest and best minds out of practical affairs, out of the scientific, political and commercial movements of the time, by so far do those religious—philosophic systems stand in the way of her progress towards economic independence. Why have the people of India been tardy in grasping the scientific principles of Western industrial organisations? I shall not presume to answer the question at any length but content myself with suggesting that we must, as a people, look well to the religious and social foundations of our national life.

Break the monopoly of caste prerogatives and social privileges. They are self-arrogated, and are no more inherent in any one caste than commercial predominance or political supremacy in any one nation. Learn the luxury of self-sacrifice; elevate your brethren of the humbler castes to your own level; and smooth all artificial angularities. Always appraise action more than talk, and ever be ready to translate your word into deed.

I desire in the next place to call your attention to the development of national spirit. Throughout Europe of the last two thousand years, there has been constant progress in the unifying and solidifying of national life. Petty States and warring Principalities have given place to strong, compact and homogeneous nations, each possessing decided national characteristics, and each working through the patriotic impulses of all its people for the preservation of the national ideal. Now I find in my reading that the most frequent criticism offered against us as a people by candid critics is that we are disunited, many-minded, and incapable of unselfish co-operation for national ends. If this criticism is true, if it is true that India is a mass of small heterogeneous peoples unfitted for independent national existence, then it behoves us as intelligent men and patriots to put in motion the principles of unity and co-opera-

tion. To this end I favour the adoption of a national speech and the inculcation of a national spirit.

And the last movement to which I would direct your attention is the development of Science in Europe during the last hundred and fifty years. The story of that development reads like a romance of the old time. Within that period have been developed railway, steamships, electric telegraphs, the telephone, friction matches, gas illuminations, knowledge of electricity in all its multiform applications, phonograph, Rontgen rays, spectrum analysis, anæsthetics, the modern science of chemistry, the laws of molecular constitution of matter, conservation of energy, organic evolution, the germ theory of disease, and many others of the utmost practical importance in modern life.

I submit my friends that India's part in this wonderful movement has been shamefully small. Can it be true, as one writer has said, that some "strange feet of arrest probably due to mental exhaustion, has condemned the people of India to eternal reproduction of old ideals?" I cannot believe that the intellectual power of India is exhausted, nor can I believe that her people are no longer capable of adding to the sum of human knowledge. We have an intense and justifiable pride in the contribution of our sages of by-gone days to the philosophic, the literary, and the artistic wealth of the world. It should be our chief pride, our supreme duty, and our highest glory, to regain the intellectual supremacy of the ancient days. The atmosphere of the West is throbbing with vigorous mental life. The pursuit of *new* truth is the first concern of every stalwart mind of the West, while the mass of our people are content to live stolid, conventional lives, blindly following the precepts of the fathers rather than emulating the example they set of intellectual independence and constructive energy. I cannot do better than close my remark with those fine lines of the Poet, Matthew Arnold:—

"The East bowed low before the blast
In patient, deep disdain;
She let the legions thunder past,
Then bowed in thought again."

I would not for a moment have you think, my friends, that I return from the West a convert to Western ideals, or in any sense a pessimist concerning the future of India. There are many defects in the Western civilization that no impartial student of affairs may ignore. The evils that have grown up in the centralizing of population in the great industrial cities constitute, in my judgment, a serious menace to the future of those races. There are weighty problems of administration, of morals, of public health, which the West, with all its ingenuity, has not been able to solve. There is the internal conflict between capital and labour which is becoming more acute as time goes on. Nor can one visit the great commercial centres of the

West without feeling that the air is surcharged with the miasmic spirit of greed. Everywhere the love of display and the sordid worship of material wealth and power, has poisoned the mind of the people against the claims of the simple, homely life, which the Indian, in his love for the things of the spirit, has cultivated since history begun.

It may be the mission of India, clinging fast to the philosophic simplicity of her ethical code, to solve the problems which have baffled the best minds of the West, to build upon a sound economic policy along modern scientific lines, and at the same time preserve the simplicity, the dignity, the ethical and spiritual fervor of her people. I can conceive of no loftier mission for India than this : to teach philosophy to the West and learn its science ; impart purity of life to Europe and attain to her loftier political ideal ; inculcate spirituality to the American mind and imbibe the business ways of its merchant.

PRESIDENTIAL ADDRESS

BY

THE HON'BLE MR. VITHALDAS DAMOTHER
THACKERSEY.

The Hon'ble Mr. Vithaldas Damother Thackersey delivered the following Presidential Address:—

GENTLEMEN,—

It was with much diffidence that I accepted the invitation of the Executive Committee to preside over the deliberations of this, the Second Session of our Industrial Conference. While I considered it a very great honour which the Committee wished to confer on me, I yet felt that it was one to which I could not hope to do as much justice as, for instance, His Highness the Maharajah Gaekwar who has just addressed to you words of ripe wisdom from his experience of many lands and his study of many systems, or the first President, Mr. Romesh Chander Dutt, whose large administrative experience, wide reading, and sound knowledge of economic and industrial history, pre-eminently qualified him to guide this Conference in the great work that it has undertaken. I allowed myself, however, to be persuaded into accepting the important part that it was proposed to assign to me in connection with this year's meeting, by the consideration that the Conference, being devoted to the advancement of industries and commerce, may be pleased to give indulgent hearing to one who is engaged in these activities, and who may, therefore, be expected to know the more practical aspects of some of the many problems which this Conference may help to solve. I shall not detain you further with personal observations, and for the few that I have already made I offer you my apologies.

Gentlemen,—Whatever doubts might have been felt last year as to the utility of holding an Industrial Conference, I am sure they have been dispelled by the experience that we have already gained. The meeting of the Conference and the circular letters of the General Secretary, the tours made by the Assistant Secretary in Madras and Northern India, of which a very interesting account has been supplied to us, the admirable report of the Proceedings of the last Conference, and Mr. Mudholkar's excellent summary of Industrial activities in the country during the year, are all proofs of the success that has attended the efforts of the promoters of the Conference to create public interest in industrial questions. At no period in our history have the thoughts of the people been concentrated so much on the development of Indian indigenous industries

The objects of the Conference have evoked the warm sympathies of Government and of the official and non-official European community, which I consider to be a happy augury of the success of our industrial movement. Differences may arise, they must arise now and then, between the Indian and non-official Anglo-Indian communities, as regards political and administrative questions with which, however, we have nothing to do on this platform. But on industrial and economic questions there is a very extensive field for co-operation and fellow-feeling between them. The Englishman who invests capital and spends his energies in Indian industries suffers equally with the Indian producer from ignorant interference from England the thrusting of inequitable financial burdens on the tax-payer in India, and the adoption of measures which lead to discontent and unsettlement of the minds of the people. I rejoice to see that this is coming to be recognised in an increasing degree, and I may mention as an illustration the strong and unanimous opposition which Anglo-Indian opinion offered, in support of Indian interests, to proposals of one or other of these kinds made in recent years. I am firmly convinced that the promoters of this Conference have displayed true statesmanship and deep insight into the realities of the situation in extending their appeal for sympathy and support to Government and the non-official European community; and the response from these quarters which has been received and which is set forth fully in the excellent Report of the last Conference is, I think, one of the brightest and most hopeful features of public life at the present time. I earnestly pray that the feeling of harmony thus begun will grow in strength and power as the years pass, and that Englishmen and Indians will appreciate to a larger extent the value of mutual co-operation for the material advancement of the country and in the amelioration of the unspeakably wretched condition which is the lot of millions of the Indian people. While on this subject I should not omit to say a word of acknowledgment of the able and extremely sympathetic manner in which the new Commercial and Industrial Department of the Government of India has been administered by the retiring Member, the Hon'ble Mr. Hewett and Mr. W.L. Harvey, the capable Secretary in charge of the Department, and to express the hope that under the New Member who is well-known and justly esteemed in this country, the Department will gain further the confidence and good-will of the industrial and commercial public. The appointment of the Stores Committee and the resolution announcing its appointment, afforded conclusive proof of the great sympathy felt by the present Government of India for the cause of our industrial advancement, and the whole country looks to His Excellency the Viceroy, of whose strength of principle and devotion to duty it has had ample proof, not to allow interested intervention to frustrate the just

and righteous object with which the Committee was appointed. The Committee has made its Report, and I would humbly suggest that the Report should be published at once to enable the public to express its opinion on the recommendations contained in it. The value of such enquiries extends beyond their immediate results. I respectfully submit that we are entitled to have an opportunity of expressing our opinion on the recommendations, before the Government in England or India pronounces its final decision. This is a matter where Indian and Anglo-Indian interests are identical and this Conference will have the whole country at its back if it elects to approach Government with a prayer for the immediate publication of the Report of the Indian Stores Committee.

Foreign Capital.

I have referred to Englishmen who have invested Capital in Indian Industries, and I may not inappropriately make some observations here on the much debated question of Indian Capital *versus* Foreign Capital. The great mistake to be guarded against is that, because certain capital used in India is foreign, it therefore must do harm to the country. It has, of course, to be considered that we ought not to pay too high a price for it. Let us take the instance of Japan, an Asiatic people who have risen to greatness on account of their practical genius, whose industrial conditions are similar in many respects to our own, and whom we are all naturally anxious now-a-days to emulate. All the great statesmen and patriots of Japan are eager to attract foreign capital to their country for purposes of industrial development. It is because they feel that, notwithstanding their skill, enterprise and ability, they are greatly handicapped owing to want of capital. At the same time, when they speak of attracting foreign capital, they do not mean to allow all the profits of the industry to go out of the country. They will not pay more than a reasonable price for it. Their position as an independant State, of course, enables them to regulate the conditions under which foreign capital will be free to engage in the development of the country. But in our country, where the open door policy prevails to the fullest extent, and where already there is a very large amount of foreign capital invested, and, I admit, there is a very large field for it, it is necessary for us to form a general conception of the limits within which its application is beneficial. Let us take our Railways. The capital outlay from the commencement on open lines, lines partly open and on lines wholly under construction, amounted at the close of the calendar year 1905 to over Rupees 370 crores. Without maintaining that the Railway Policy of the Government of India has always been dictated solely by the productive needs of the country, I may say that we cannot be enjoying all the advantages of these Railways, the ability to cope with

famine, the easy transportation from one part of the country to another, and not least of all our assembling here to-day for the purpose of advancing the interests of the country in various directions, but for the fact that we were able to get this large capital at a comparatively cheap rate of interest from England. Indeed, it is easy to see that the spirit of nationalism that is inspiring our movements to-day would have been impossible but for the network of Railways which, annihilating distance, brings the Punjab and Madras, Assam and Baluchistan near to each other and binds the whole country by the common bond of economic and national interests. Apart from strategic Railways, everybody is agreed as to the immense benefits which have been conferred on the country. Even now there are several new lines which may be laid down with the greatest benefit, and which will tap new country and which may give scope for Indian capital, if we can be satisfied with a return of 4 per cent. on the outlay. If we cannot afford to invest money at that rate, is it not desirable that those who are able to do so should lend us the money? Though in the beginning Railways may not earn much, experience shows that their earning power steadily increases with the progress of the country. If Government had allowed foreign investors to construct Railways unconditionally, the high profits and the unearned increments thereof would have gone out of the country for ever to enrich the original investors after the manner of the American magnates who have the good fortune to be the sole owners of Railways uncontrolled by Government. We owe, therefore, a deep debt of gratitude to those who, with clear foresight, kept in view while arranging terms with the Guaranteed Railway Companies the ultimate object of nationalizing them after allowing the investors to take the full benefit of the Railway for a limited period, generally of twenty-five years. It is thus that most of the main lines have already become State lines, and that the few remaining ones will become so in course of time. The system of the repayment of the value of Railways by annuities on the termination of the period fixed by their contracts, obviates the difficulty and inconvenience incident to the raising of heavy loans. How profitable this policy of nationalizing the railways has turned out to be may be gauged by the case of the East Indian Railway purchased by the State in 1880. In 1905, the net earnings on this line amounted to Rs. 482 lakhs. Out of this amount 87 lakhs were paid as interest charges on borrowed capital and Rs. 216 lakhs as annuity to the original shareholders on the basis of repaying the whole purchase amount before 1953. There still remains Rs. 160 lakhs as net yearly gain to the State, while after 1953, the yearly gain will be trebled, taking the present revenue as it is. Here, then, is an instance of the right use of foreign capital. But when we turn to the Petroleum Industry in Burma, the

Gold Mines of Mysore, the Coal Mines of Bengal, the Tea and Jute industries, the carrying trade by sea and the financing of our vast foreign trade by foreign Banks, we come upon another and a less favourable aspect of the question of the investment of foreign capital. It is impossible to estimate accurately the amount of wealth that goes out of the country in this manner, though an approximate idea can be had of it from the excess of our exports over our imports, after omitting Government transactions. It must be remembered that so much of this amount as represents merely the interest on borrowed capital, should be not regarded in the light of a drain from the country. It is in such investments as these that we find cause for complaint. In such cases I cannot but think that it would be to the permanent good of the country to allow petroleum to remain under ground and the gold to rest in the bowels of the earth, until the gradual regeneration of the country, which must come about under British rule, enables her own industrialists to raise them and get the profits of the industries. A country which maintains a population of thirty crores is not likely to let about one lakh of persons starve, and this is the number of wage-earners benefited by these industries. The price paid is much too great for the advantages accruing from them to the country. That such is the view of all impartial people who are sincerely interested in the material advancement of the country, is proved by the following passage which I quote from the excellent paper which Mr. Holland, the Director-General of the Geological Survey, read before this Conference last year. Speaking of the successful exploitation of the Petroleum Fields of Burma, he observed: "The one regrettable feature is the fact that the capital required to drill the deep wells has been raised in Europe, and the profits consequently have left the country. In the petroleum industry, as in so many other enterprises of the kind, India will continue to pay such an unnecessary and undesirable tax as long as those in the country who possess money will not risk their reserve fund in industrial purposes."

Indian Banks.

I think, however, that indigenous capital will not be quite enough for financing the enormous and ever-expanding trade of the country and for accelerating the progress of our material and industrial regeneration. For these purposes, we require as much capital as we can, and if we can get it cheaper in England than in India, I for one do not see why we should not avail ourselves of it. No country in the world can make much progress in industrial directions without plenty of capital. The problem of India may be briefly stated as follows:—

Our immense trade, our comparatively small capital, the fixed open door policy of our Government, and the absence of power to control our financial policy—these are the main factors

of the situation, and the question is how best we can under these conditions develop our industries. We cannot do without foreign capital; it will be extremely short-sighted to reject it on sentimental grounds. We must avail ourselves of it, but we ought to take care that we do not pay more for it than other nations. We have to consider what is the best way of bringing foreign capital to India. It is necessary for this purpose to offer foreign capitalists absolute security for their money, in order to get it as cheaply as possible. Government is in a position to do this and hence Government is able to borrow from them as much as it likes on easy terms. There are few private individuals in India who can offer security necessary for this purpose. Smaller capitalists there are in plenty, but each of these by himself can be of no use in this matter. But what individuals cannot do singly, they can do by combination. Joint-Stock Banks being the results of such combination offer the only means of bringing foreign capital into the country at easy interest. Till recently there have been no such Indian Banks among us, with large enough capital for the purpose. It is, however, a matter for satisfaction that two such Banks have been started in Bombay within the last few months. These Banks at present intend to finance the internal trade of the country for which there is a wide scope; but we hope that after some time they may feel their way to extend their operations to foreign exchanges, and thus take advantage of foreign capital as the other Exchange Banks are at present doing. We want more of such Banks in order that the present situation may be ameliorated. The Presidency Banks are not allowed to borrow from foreign countries. The Exchange Banks do trade with foreign capital, but as their Shareholders and Directors are outside of India, the immense profits of the trade go to them and not to the people of India, who get only the bare interest on their Deposits running to over sixteen crores in these Banks. Indian Banks with large capital have, therefore, an important function to perform in this and in other ways, and I hope and trust that the movement begun in Bombay will expand and flourish. There is one other suggestion which I should like to make before leaving this part of the subject. It may happen in many cases that although we may not be able to provide all the capital required for a new industry, we may yet be able to supply a portion of it, and so save some portion of the profits of the industry from leaving the country. But few foreign Companies ever give a chance to Indian Capital. They like to do all the financing themselves and do not even place their shares in the Indian market. This is unfair, and I would suggest that the legislature should make it obligatory on every industrial concern floated by Foreign Companies that the same opportunities should be given to Indian Capitalists, that the prospectus should be published

simultaneously in both countries, that the time for applications for shares should be the same, and that allotment must be made at the same rates, and on the same principles. This is the least that our Government should do under the present circumstances.

Swadeshi Movement.

Gentlemen, you will, perhaps, expect me to refer here to the Swadeshi movement, and I hasten to satisfy that expectation. Whatever Bengal might have done or failed to do during the last twelve months, she has undoubtedly given an impetus to the Swadeshi idea. All over the country to-day among young and old, rich and poor, men and women, high caste and low caste, the word "Swadeshi" has become a household word, and the spirit of it too, we may hope, is well understood. Gentlemen of Bengal, on behalf of the whole country I tender you our hearty thanks for this valuable result which is wholly due to your enthusiasm in the cause of the mother-land. I am not one of those, Gentlemen, who sneer at enthusiasm. Enthusiasm is divine, and without it even in regard to the industrial regeneration of the country we can achieve but little. You have applied the life-giving spark to the slumbering spirit of Swadeshim in this land, and yours is the honour of concentrating the national mind on the work of industrial development. It is inevitable that in a time of excitement and distress words might be spoken and things done which in calmer moments might not commend themselves to our sober judgment. I am referring solely to the effect of your enthusiasm and self-sacrifice on the whole of India, even among those who did not and could not see eye to eye with the Bengalees on the question of Partition and the subsidiary questions connected with it.

Agricultural Industry.

Gentlemen, we have got the Swadeshi idea firmly implanted in the national mind. We have now to consider what our programme should be for the near future. We cannot do everything at once. Industries are not created in a day. We should profit by the experience of other countries which have grown industrially great, and, in the pursuit of the Swadeshi ideal, we should follow the methods which have proved successful in those countries. I admit that in one important respect the conditions with which we are beset are somewhat different from those prevailing in countries which have come to the front as centres of the world's great industries. We cannot look to Government to give us any direct help in the shape of protective import duties or bounties such as have been given in other countries. But short of that, Government can do much

and I am satisfied that they are not likely to revert to the old *laissez-faire* policy in respect of our industrial advancement. Although, as I have said, we cannot do everything at once, our plan of action should be drawn up with a view to future developments in all directions. When you view the industrial situation, Gentlemen, the first thing that forces itself on your attention is the primitive condition of the premier industry of the country, I mean the Agricultural Industry, the industry which supports more than 65 per cent, and, according to Lord Curzon, 80 per cent. of our population, and on which we must depend for our subsistence as well as for the raw material of our chief manufacturing industries. So long as agriculture is carried on in the present primitive fashion, no great industrial improvement need be expected in India. Even Protectionist Economists admit that until the agricultural industry has reached a high state of development, manufacturing industries cannot be largely brought into existence even with the support of the State. In England itself the era of manufactures was immediately preceded by a period of extraordinary agricultural development, due mainly to the enterprise of the great landlords. I rejoice to see that the greatest landlord of all in India, namely Government, are recognising their duty and have taken and are taking measures to spread a scientific knowledge of agriculture, by means of colleges, experimental farms and such other measures, to free cultivation from insect pests and to introduce new and valuable forms of the agricultural industry. The work done in connection with Rubber Cultivation, if it lead to the tree becoming naturalised in India, would add materially to the national income, as the demand for rubber all over the world is immense. While Government are waking up to their duty, it behoves private landlords like the Zamindars of Bengal, who correspond to the landed aristocracy of England, to devote their time and resources towards developing their industry. Gentlemen, if the Swadeshi spirit inspires these great landed magnates to introduce science and system into agriculture so as to make it yield the highest profit of which it is capable, then, believe me, you will be in sight of large manufactures financed, controlled and worked by our own countrymen. It is a common fallacy to suppose that the arena of great achievements lies far afield of our everyday lives. It is never so. Few people talk of the Swadeshi movement in connection with agriculture. But really that is the industry which most requires the application of the true Swadeshi spirit, for on it are based all our possibilities of manufacturing industries. If the Mill Industry flourishes in Western India, it is because the Guzerathi is acknowledged on all hands to be the most efficient cultivator of cotton in India.

Mineral Industry.

From Agriculture, let us turn to Mineral Industries, in which considerable interest is being evinced at the present time. I do not think that there is any one in India who can speak with greater authority or give more valuable information on this subject than Mr. Holland, the Director of the Geological Survey of India, and I would remind you of his admirable paper read before the Conference last year as well as to his official reports. He is a gentleman with the true Swadeshi instinct in him and I believe that to his writings and his influence, is due to a very large extent the active interest shown everywhere in Mining enterprise. Possessed of the knack of clothing technical matter in popular style his reports are easily intelligible to the general reader and have been read everywhere with enthusiasm. There was a very marked development of interest in Mineral Industries last year resulting in an increase of 50 per cent. in the prospecting licenses and Mining leases taken up. The explorations of geologists confirm the verdict of ancient history that our country is rich in minerals of every kind, and that there is hardly anything which we cannot produce if only capital, enterprise, and the requisite technical knowledge were forthcoming. The total value of the mineral productions of India, omitting minor industries for which no returns are available, was over 8½ crores of rupees in 1905. Gold and Coal contributed two-thirds of this value, and in both of these Mineral Industries, I need hardly tell you that Indians have very little share. The same is the case with the Petroleum Industry which comes third in the list of values. These three together account for three-fourths of the total value of mineral production in India. What are the causes of this apathy on the part of the Indian people? Want of capital is one cause. But want of technical and scientific knowledge is probably a more important one. One of the first needs of the country, therefore, is to educate a large number of young men and to train them up in Mineral Industries. So long as there is the present dearth of skilled experts, and one has to pay a high price for the preliminary work of exploration, we can never expect Mining Industries to progress rapidly. One does not grudge to pay a high fee to an expert who has to be consulted at the final stages or from time to time during the progress of the work of exploration. But for preliminary work, we want a large number of trained men with a thorough practical knowledge of the different kinds of Mineral Industries. Government have already done something in this direction. In Bengal a scheme for giving Mining Instruction has been sanctioned by the Imperial Government, and a Mining Professor and a Mining Inspector have been engaged. The experience of these officers has dispelled the fear expressed in some quarters that there was no real demand for Mining Instruction in India. Professor Robertson has received

applications which show that India-trained mining students will be able to readily obtain employment when they become qualified. Four young Indians are studying Mining in the University of Birmingham, receiving Government Scholarships of £150 per annum. These are happy signs, but we cannot help thinking that instead of sending Indian students to learn Mining in England, the conditions here are such that Government by establishing an up-to-date Mining College in India can make this country a great centre of Mining instruction, besides training our own students to take charge of the higher posts in the Geological Department. If it be deemed necessary to give Indian students the expanded knowledge that comes of visiting the centres of Mining in Europe and America, it can be so arranged that after completing their course of studies in the Indian College, they may spend a short time in those centres. It is a matter for thankfulness that Government Rules in relation to Mining enterprise are liberal and, speaking from my own personal experience, I can say that the Geological Department is always anxious to give the fullest information and assistance to any enquiry. In connection with the Mineral Industries, it has been pointed out that without a cycle of chemical industries, it is almost impossible to make several of them paying. Several instances of this kind are mentioned in Mr. Holland's quinquennial review published last year. In his paper read before this Conference last year, Mr. Holland referred to the manufacture of Ammonium Sulphate as a promising industry. It is gratifying that the East Indian Railway Company, has now nearly completed the erection of a plant on the Giridih Coalfield for this purpose. I have no doubt that other Colliery owners will follow suit when they find that this experiment proves successful. I also understand that a small plant for the manufacture of ammonium sulphate from gas-liquor has been set up by the Calcutta Gas Co., using sulphuric acid. There is a vast field for this as well as for similar industries which make use of the bye-products of Mineral Industries, but a large number of chemical experts are required to utilise them in full measure.

Cotton Industry.

I will now refer shortly to manufacturing industries, of which Cotton is by far the most important, both in bulk and value. Next to food comes clothing among the necessities of life. I will not detain you with the statistics of the industry. These have been ably enlarged upon in some of the papers read before the Conference at Benares. Nor shall I take up your time with my opinions on the Hand-loom Industry and its prospects. A separate resolution is to be submitted to you on the subject, and the speakers to that resolution will not thank me for anticipating their remarks in my address. The importance of the Hand-loom Industry is widely recognised, and the only question is how the

ordinary hand-loom can be improved so as to meet the competition of its rivals. The conditions of the new hand-loom are that it should be cheap, simple in construction, and capable of being easily repaired by the village carpenter, while at the same time the output should be larger than that of the existing ones. There are several inventions in the field, and only experience can show which of them come up most to these requirements.

Turning to the Power-loom industry, of which I can speak from personal knowledge, most of you are aware that Indian Mills produce cloth generally of the coarser kinds, largely manufactured up to 21s warp and 30s weft; and only a small proportion of finer kinds of cloth. The reason why they have to restrict themselves to the production of the coarser sorts, is the quality of cotton grown in the country at present. So long as cotton of superior staple is not produced here, it is hopeless to expect the manufacturer to improve the quality of his cloth. That he is doing his best is clear from the fact that the official returns show that every year finer qualities of cloth are manufactured to an increasing extent. At the present moment cloth of the quality which Indian Mills largely produce is hardly imported into India. If the country gives the Indian manufacturer a superior staple cotton, there can hardly be a doubt that he will be able to supply the needs of the people from his looms. What a large field there is yet to be exploited by the Indian Power-loom weaver, is shown by the fact that the quantity of cloth imported from Great Britain last year amounted to over 200 crores of yards. Besides we imported $3\frac{1}{2}$ crores lbs. of yarn. If the Indian Mill-owner is able to produce the superior kinds of cloth and yarn, he can safely increase the number of mills to ten times what they are. I am glad to say that the prospects of our being able to weave finer cloth are fairly promising. The gratitude of the country is due to the Government of Bombay for its action in regard to the experiments for the cultivation of high-class cotton in Sind from Egyptian seed, which have been attended with splendid success. The area sown this year was 7,000 acres; from the point of view of the agriculturist also, the introduction of the superior cotton has been a great boon. The yield per acre was greater and the price considerably higher than that obtained for ordinary Sind cotton. The gain to the cultivator is so great from the introduction of Egyptian cotton, that it is not extravagant to hope that all the arable land suitable for this quality of cotton on the banks of the great perennial irrigation canals, which is estimated to be at least 100,000 acres and is probably more, will be brought under it at no distant date. The only retarding feature is that this year the plants were attacked by Boll-worm and sustained damage to the extent of 50 per cent. But the Government Entomologist Mr. Lefroy, has suggested to cultivators a certain method of prevention which we may hope they will follow. When this comes to pass, the conditions of the Indian Cotton Industry will be re

volutionised, and India will be able to supply a very large portion of her demand for superior kinds of cloth. Then will be the time for the full realisation of the Swadeshi ideal in respect of our clothing. Until then for superior varieties of cloth we must depend on the foreign producer.

May I venture to make an observation here in regard to the complaint lodged against Indian manufacturers by our Bengali friends to the effect that they (the manufacturers) did not sufficiently support them in their patriotic and unselfish Swadeshi propagandism? Those who brought forward the charge did not realise that prices are regulated by the unalterable laws of supply and demand, and that howsoever laudable the object may be, it is impossible to control prices by artificial means even if the manufacturers desired to do so. The manufacturer is only one stage in the process whereby the cloth that he produces reaches the person who uses it. Between him and the consumer there is a hierarchy of intermediaries, all of whom, depending as they do on the profits of trade for their maintenance, are not likely at any time to forego the opportunity of higher profits. Even if the manufacturer reduced prices to a slight degree below the market level, it would not at all follow that the consumer would get the advantage. The dealers would get it.

The mechanism of trade is a highly complex one and a single bale of cloth has to pass through three or four hands before it reaches the consumer. It is too much to expect each of these persons to be so philanthropic as to lose his legitimate opportunity. The complaint is founded on a misconception as to the nature of trade which follows high prices as water flows from a higher to a lower level.

The one unfortunate element of the Indian Cotton Mill Industry, is that it has always been looked upon by Lancashire manufacturers with unfriendly eyes. From time to time, the self-interest of these manufacturers has laid a heavy hand on our long struggling industry under one pretext or another. Now, it is the sacred principle of free trade; at another time it is humanity and philanthropy and all the virtues of mankind rolled into one. I do not refer to the abolition of the import duties on cotton goods twenty-five years ago. But the imposition of the excise duty on Mill-made cotton cloth in compensation for a revenue duty on imported cotton goods was a flagrant departure from the practice of Great Britain itself. But this has not been enough. The cry is now for restricting the hours of labour of adult male labourers in our mills. The reason assigned for the interference is, of course, humanity, but sometimes the cloak is thrown aside and the naked truth comes into view. Thus during the discussion of the Indian Budget in the House of Commons, Mr. Keir Hardie complained that the manufacturer in India had the advantage over the manufacturer in Great Britain of lower wages. It was wrong, he said, that he should also have the advantage of long hours. Well, if we consi-

der what immense advantages England has over India in regard to manufacturing industries, on the principle of Mr. Keir Hardie's complaint, we should be justified in asking for a curtailment of many of them. But who would listen to us? If the possession of cheap labour is an undue advantage, why not the possession of cheap capital? The fact, however, is Lancashire does not care to argue with us. It is the old story of the wolf and the lamb. Lancashire would be glad to kill the Indian industry, and one reason is as good as another for that purpose. It is due, however, to the Government of India to acknowledge that they have always tried to withstand the pressure of Lancashire, though, unfortunately for us, often without success. Now Mr. Morley has been induced to send out a special Inspector to enquire into the conditions of labour in Indian Factories. The factory-owners in India will do their best to facilitate his work, for they have nothing to conceal. But we have our fears that Lancashire will be satisfied with nothing less than putting a limit on the hours of adult male labour. Such a thing would be unprecedented, and we may hope that the Government of India will energetically protect the interests of our industries. We may appeal to Mr. Morley himself who is fully cognisant of the evils of such restriction to resist the attempts of Lancashire to cripple the Indian industry. The Bengal Chamber of Commerce has strongly protested against interference with the hours of labour in Jute Mills, and on behalf of the Cotton Mill Industry, I humbly add my protest in the same sense to that of the Chamber.

Sugar Industry.

I have dwelt at length on the two most important industries of India. There are numerous other industries for which there is a vast field in this country and which if taken up by our capitalists would be productive of great benefit to themselves as well as to the labouring population. After cotton piece-goods, sugar is the most important article imported into India in point of value, and it is well-known that the Sugar Industry has been declining in this country of the late years as the result of foreign competition. The history of the establishment of the Beet Sugar Industry in Europe and its development to its present proportions, is one of the most fascinating chapters of industrial history, and for a succinct account of it I would refer you to the excellent series of articles which have appeared in the pages of the *Indian Trade Journal*, which my friend, Mr. Noel Paton, edits with quite as much zeal as ability. *The Indian Trade Journal* has enhanced the practical value of the series of articles on sugar by publishing statistics relating to the production of sugar-cane and the demand for sugar in each of the provinces of India. India is the home of the sugar-cane, and is it not strange that we should be ousted from the manufacture

of sugar by foreign competition? There is an immense market for sugar in this country. What is needed here is, first, the improvement of the quality of the sugar-cane grown and the introduction of modern machinery. Investigation has shown that beet-root cannot be grown in India on a profitable scale. But it has been found possible to increase the percentage of sugar in the cane by the use of suitable manure. Thus the problem is an agricultural one first. The United Provinces of Agra and Oudh have the largest area of land under sugar-cane, and we may hope that our friends in those provinces will take early steps to organise the Sugar Industry on modern lines.

Other Industries.

There are similarly the Jute Industry which our Bengali friends ought to develop; Silk, which may be introduced in several parts of the country, and paper in Burma, as shown by an instructive monograph just issued by the Government paper expert, Mr. Sindall. Leather is another industry for which there is a large field in India. It does not require large fixed capital, and, in spite of the prejudice against working in hides, there is a large amount of cheap labour available. The enormous number of hides and skins exported from the country every year shows that there is no lack of the raw material for the industry. We are thankful to the Government of Madras for all that it has done and is doing to establish the Chrome Leather Industry in that province. I would observe in passing that it is not necessary nor is it advantageous that the same industries should be established in all parts of the country. This may not be possible in the first place. Even where it may be possible it may be found, perhaps, that the production of wealth will be better assisted by leaving provinces to promote the industry for which they have special facilities.

Industrial Survey.

I venture to suggest that the Commercial Department should have its counterpart in each province, the duty of the provincial department being to devote its attention to the industrial and commercial possibilities of the province and keep in touch with its economic problems. Of course this is being done to some extent under the present system, but the work deserves to be attended to more systematically and thoroughly. I read with pleasure the other day in the papers that the Madras Government has appointed Mr. Alfred Chatterton, Director of Industrial and Technical Inquiries in that Presidency for five years. Mr. Chatterton's work for the industrial development of the Southern Presidency is well known, and there is every reason to expect that in the next five years he will be able to do important service in exploring the industrial capacities of the province. We want similar measures adopted in every province

in the country. Provincial agencies will be better able to conduct the much-needed survey of indigenous industries recommended by the Committee on Industrial Education appointed by Lord Curzon, and also suggested by the Hon'ble Mr. Hewett in his last budget speech. He urged the Provincial Governments "to make a survey of the state of indigenous industries within the area of their jurisdiction with a view to ascertaining the exact state of the various industries and handicrafts, the amount of the earnings and the present condition of the artizans respectively employed in them, the precise manner in which the different industries have been affected by competition with imported articles, the practicability of creating new markets or of developing markets which already exist, and the possibility of giving a new lease of life to these industries, either by means of special instruction or by the improvement of the appliances in use."

Labour Question.

Gentlemen, I have spoken of the organization of capital, and the development of industries. I should not omit to make a few observations on the all-important question of the supply of labour. True, we have a large population, but owing to illiteracy and the prejudices concomitant to it, every industry in the land feels the difficulty arising from not having an adequate supply of labour. In order to convert our vast population into an effective labour-force, we have first of all to instil into them the rudiments of knowledge, which will widen their mental outlook, fill them with new aspirations, and enable them to know what opportunities await them in the industrial world, and to take advantage of them for their own and their country's benefit. Plague has in many parts of the country played sad havoc with the labour supply and, speaking from the purely industrial and commercial point of view, I beg to express the earnest hope that Government may be pleased to create more centres of investigation, so that the discovery of a remedy may be accelerated.

Except by the Committee working at the Parel Laboratory, which is doing excellent work, there is no effort made at present to elucidate the etiology of the disease, and what can one Committee sitting in a single centre of plague do to trace the causes of a calamity so widespread and elusive?

Education.

Gentlemen, you all know that the Government of India have addressed Local Governments on the subject of the abolition of fees in primary schools throughout the country. From the strong views expressed by the Supreme Government in their circular letter, we are led to hope that the proposal will be carried through at no distant date. This will be the first step towards introducing a system of universal national education, and its effects are bound to be most beneficial to the people. Gentlemen, I hope that

Government will be equally liberal towards technical education, for which the grant now made is insignificant, considering the vast extent of the country and our large population. What I have said above as to the necessity of a large number of experts for the development of Mining Industries, applies with equal force to all industries, and hence technical education on a large scale is one of our primary needs. I may also mention here the importance of a wider spread of Commercial education, which at present is practically neglected by the State. I ought to make an exception in the case of Bengal where Commercial education is imparted in the Presidency College at Calcutta, and Madras, where a rather feeble attempt has been made to encourage it. Those who do not understand what Commercial education is and mistake it to be mere book-keeping, sneer at it, but Commercial education is much more than that, and if there were more of commercially educated men among us, we would be able to retain in the country a very large proportion of the profits which now go to foreign firms which do importing and exporting business only.

Coming to the highest departments of industrial education, the department of Scientific Research, it is gratifying to note that after a long period of suspended animation, the Indian Institute of Science, which owes its origin to the far-seeing patriotism and princely munificence of the late Mr. Jamsetji N. Tata is likely to shortly become an accomplished fact, as evidenced by the appointment of Dr. Travers, an eminent scientist, to the Directorship of the Institution. All these are hopeful signs of the times, and I am sure you will agree that they all point to a bright industrial future for our country.

Concluding Remarks.

Gentlemen, I have endeavoured in the remarks that I have made to-day to set before you in as few words as possible the main features of the industrial situation as it appears to me:—the importance of utilizing foreign capital in the development of the country instead of being utilized by it for its own gain, the principal directions in which industrial progress may be made, the lines on which we should proceed, and the requirements of the country in the matter of technical and scientific education. No doubt, there have been omissions, but these, I am sure, will be supplied by the gentlemen who will speak on the several resolutions to be placed before you. The word Swadeshi, Gentlemen, signifies the love of motherland. It does not signify hatred of any other land. This love of motherland, if it really becomes a part of our nature, will manifest itself not in one direction only but in all; not in one department of life only but in all departments of it. Industrially you all know that Swadeshism is enforced in many civilized countries by means of prohibitive tariffs, and bounties to home producers. This may or may not be a wise

policy, but there is at any rate nothing immoral or unrighteous. We are only following the example of these nations, and following it at a very great distance, by making voluntary efforts to encourage indigenous industries. There is nothing wrong in this. On the contrary, it is all the more creditable to us that what in other countries requires to be enforced by the State, is undertaken here by the spontaneous action of the people. May the spirit of Swadeshism grow among us, and may the development of industries, which is sure to follow it, lead to the permanent prosperity of this, our motherland.

GLASS-MAKING.

The following paper was read by Alakh Dhari, Secretary, Upper India Glass Works, Ambala City.

Glass is an article that is mainly formed by fusion through heat of two substances, viz., silica and alkali. A remarkable feature of glass is its ductility that is to say when in molten condition it attains a peculiar sort of gluey adhesiveness which enables it to be gathered round the end of a tube and blown into, expanding and making it hollow from inside, and moulded into any shape or size. On cooling it turns hard, though brittle, and retains the same shining smoothness and brilliant appearance that may be imparted to it when still hot. Glass can be made of any shade or colour, opaque or transparent. Climatic changes produce no damaging effect on it nor age cause decay.

Besides the manufactured article, a kind of native glass, called *obsidian* is sometimes found in the vicinity of volcanic mountains. Obsidian glass is a substance to which, it is generally believed, vitreous lavas turn themselves on cooling. Samples of obsidian have been analysed and found to contain silicate of alumina, iron and potash or soda, etc. The name obsidian is said to have been given to it by that famous ancient chronicler and traveller, Pliny, after a certain individual, Obsidious, who, according to Pliny, discovered this substance in Ethiopia. It is said that in olden times cutting instruments and rings, etc., were made of this glass in Mexico and other countries.

It will, perhaps, be a news to many that the manufacture of glass is not a new industry in India for we find Pliny and other historians of yore making mention of glass-articles having been found in India. We also read that "in the tope at Mannikyla in the Punjab, opened by General Cunningham, which appears to date from about the Christian era, was found a glass-stoppered vessel and similar (other) vessels or fragments have been discovered in other topes of a latter date" as well. In ancient Egypt the glass-making industry had actually made wonderful progress and some of the works of art prepared in those days (that have now been unearthed) display an amount of perfection and proficiency that it is difficult to even now surpass.

Raw Materials.

The principal ingredient of glass is silica, commonly known as sand, and the quality of sand alone does in a great measure determine the quality of glass. A great many impurities are generally present in sand but none of them is so detrimental to the manufacture of glass as the mixture of iron from which, unfortunately, sands are rarely free. Arsenic is sometimes used to

nullify the bad effects of iron but it is not always successful; besides it is never possible to use arsenic in large quantities on account of its high price. The glass-makers, therefore, remain on the look-out for iron-free sands. The presence of iron can very easily be detected by first dissolving sand in muriatic acid and then pouring a few drops of potassium ferrocyanide (dissolved in water), when, if any iron is present, blue clouds would be formed. This is a most powerful (qualitative) test and has been found to disclose the existence of iron even where that substance is present in the very small proportion of one part in about two hundred parts of sand. Should any effervescence take place at the time of dissolving sand in the acid, it generally denotes the presence of chalk or a carbonate. Ordinary sands containing a little portion of iron can conveniently be used for green bottle-glass. But for manufacture of white-quality glass, if no better sands are available, the best course is to thoroughly burn sand (or stone from which it is to be powdered) to allow extraneous matters to escape in gaseous form. The process of burning sand consists in placing it on the bed of an oven and subjecting it there to the flame of fire in its passage from fire-place to flues.

A sample of French sand that is regarded as quite pure for ordinary white glass was, on analysis, found to contain :—

Silica	...	...	...	...	395 parts
Oxides of manganese, aluminium and iron	...	...	...	...	2 parts
Moisture	...	...	...	...	3 parts

in 400 parts.

Hardly less important than the silica is the element of alkali through whose agency sand and other raw materials are melted and reduced to glass under heat. There are at present only two alkaline substances that are largely used in the manufacture of glass, viz., potassium and sodium carbonates.

Potassium carbonate had until recently been manufactured from wood ashes. Roughly speaking, the process of conversion consisted in burning piles of wood to ashes and pouring water over the same allowing the soluble portion to flow out. The residue was re-dissolved and calcined forming potassium carbonate of commerce. This mode of manufacture is, however, being abandoned and this substance is now obtained from potassium chloride deposits in Germany and elsewhere, but on account of its high price potassium carbonate is not so much used as the sodium carbonate, which, also, was formerly produced from plants in somewhat the same manner as the former, but is now manufactured from common salt by what are known as the Le Blanc, the ammonia-soda and the electrolytic processes.

In the Le Blanc method common salt is subjected to the action of sulphuric acid forming acid sodium sulphate, which is then placed in a reverberatory furnace and turned into anhydrous

sodium sulphate. On roasting it with coal and chalk a black-coloured substance known as the black ash is formed. Lixivated in a number of tanks, black ash yields a pretty pure carbonate of soda. In the other process, gaseous ammonia has to be passed in a solution of salt and water and played on by carbon di-oxide gas until it is thoroughly saturated. The acid carbonate of soda, which is thus formed, is heated and turned into the carbonate of commerce. But both these modes of preparing sodium carbonate are being speedily abandoned as the ever-vigilant and progressive West has now hit upon an electrolytic process which would effect a great economy in the cost of manufacture.

Attempts have, from time to time, been made to replace the use of sodium carbonate by common salt itself in order to dispense with the troublesome and somewhat expensive process of converting it into a carbonate. We have read of a Mr. Gossage having experimented the manufacture of glass by using chloride of calcium in vaporised state through a tower filled with heated sand-stones but the silicate of soda produced by this method was not presumably found suitable or we would have seen this process generally adopted. Later on, we find Mr. George Gore trying to produce the silicate of soda in the glass-pot itself. He devised a mixture of sand, chalk and salt from which steam could only be liberated at high temperatures and thus under conditions most favourable for the decomposition of salt. A tolerably transparent glass is stated to have been produced but the cost proved prohibitive. Experiments with sodium chloride (as the alkaline agent) are being still carried on now and then, and it is not beyond the range of possibility that a day may soon come when we would find this knotty problem satisfactorily solved.

Though glass can be manufactured from sand and alkali alone, it is very necessary to include some portion of lime-stone as well in order to make the glass hard and brilliant. Lead is sometimes used as a substitute of, or as a supplement to, lime to impart a greater brilliancy.

When it is desired to give any colour to glass we have to mix oxide of cobalt for producing blue colour; oxides of chromium, copper or iron for producing green; oxide of uranium for yellow; oxide of manganese for violet; and oxide of gold for red colours.

The art of colouring glass is, however, very difficult and subtle. Much depends on the skill of the manufacturer in properly adjusting the degree of heat and in using the materials in due proportions, the least variation producing undesirable results.

I read in a South Kensington Museum Art Handbook that a Mr. Bontemps once "brought forward some very extraordinary facts in connection with the colouring powers of different bodies. He showed that all the colours of the prismatic spectrum might be given to glass by the use of oxide of iron in varying proportions

and by the agency of different degrees of heat, the conclusion being that the different colours are produced in their natural disposition in proportion as the temperature is increased " or lowered. The analysis made of pieces of ancient glass adds weight to this statement for therein we find that one and the same ingredient was contained in glasses of different colours. But so long as the modern science of Chemistry does not make any specific discoveries in this respect and the glass-makers do not find it practically safe to adopt those new methods, the general practice of using different oxides for producing different colours is likely to remain in force.

In the manufacture of glass we have to use, roughly speaking, one part of alkali in two parts of sand. The price of alkali is, however, far higher than that of sand and the cost thereof is, therefore, perhaps, the largest item in a glass-maker's bill of expenditure. Besides glass-making, alkaline soda is largely used in the manufacture of soap and paper and, in a lesser degree, in cotton-spinning and dyeing as well, so that there is a very great demand for this article in India. The representative of a firm of importers in Calcutta, when he called at our Glass-Works in Ambala last year, informed me that his firm alone had imported about 900 tons of soda the year before. There are several firms in Calcutta and other sea-coast towns whose import business is believed to be in no way smaller than that of the firm above referred to. One can thus imagine what enormous quantities of alkaline soda are imported in India from year to year. It is a matter of great regret that in spite of our extensive natural resources no real attempts have yet been made to establish any factories for this purpose in our country. The many sodium chloride deposits and that extremely cheap substance known as *reh* or *usar* which abound in plenty in Northern India will, it is believed, yield beautiful sodium carbonates, cheap in price yet strong in alkaline properties, if they are only properly manipulated. Unless, however, the prospective alkali-manufacturer in India devises means whereby the number and the quantity of bye-products is considerably minimised (and good markets found for them so that the allotment of expenditure on the main product may be lessened) and efforts are made to use the cheap materials available on spot in the manufacturing process, the chances of our being able to compete successfully with the European supplier are far remote.

I hear there are some very fine cobalt ore mines in the Himalayas. The exploiting West discovered one and immediately leased it, securing a monopoly. A great portion of the vast quantities of cobalt oxide that are used in India and for which we have to pay at about seven hundred to eight hundred rupees a maund are, perhaps, nothing else than the Indian ores of cobalt carried to Europe and refined there to be eventually brought back and sold amongst us at enormous profits.

Furnaces, Crucibles and Annealing Ovens.

A glass-maker's work is, however, only partly done when he has brought together and mixed in due proportions the different raw materials. He has next to erect a strongly refractory furnace, —a furnace that would successfully withstand intense heat and at the same time be worked with economy in fuel.

Great care ought to be bestowed on the selection of materials from which furnace bricks are made. Not only should the bricks and clay used be perfectly refractory at the temperature required for melting the glass, but they should also, as far as possible, be free from metallic oxides. The kind of bricks which in England and Germany go under the name of *Dinas* have been found greatly superior in this respect. They consist entirely of good silica bound together with a small portion of lime. The fire-clays found in Stourbridgeshire (England) are noted for their excellence but for ordinary purposes the fire-bricks of Jubbulpore are also quite good. At our request the Manager of the Perfect Pottery Company, Limited, (Jubbulpore), had some samples of his clay chemically analysed along with some samples of superior quality European materials, and Dr. Schulten, who analysed them, was of opinion that the Jubbulpore clays were in no way inferior to the foreign stuff.

The part of the furnace that requires great care in construction and necessitates the use of very excellent material is the crown or dome. I have not yet been able to ascertain whether the Jubbulpore fire-bricks can be used with sufficient success in building crowns as well but there is no doubt that, in other parts of the furnace, we can (with some judicious discriminations) safely use Jubbulpore materials.

Among glass-makers of the present day the furnace wherein heat is produced just below the pots, and the flame rises directly into it, is in common use. It is cheap and simple, and undoubtedly best fitted for manufacture of glass on a small scale. But in order to produce superior glass what is known as the gas furnace is preferred. In this, the steam is generated a little way-off and before reaching the crucibles, it gets purified and freed of unburnt carbon particles. It must be remembered that it is in the furnace only that raw materials are melted, and reduced to glass and that its quality, too, greatly depends on heat, which, if insufficient, causes, among other defects, bubbles (unliberated air) and specks (unfused carbon, etc.) and also gives to glass a sort of dull dimness in colour. To produce pure and transparent glass a furnace must have a strong, regular and steady flame of fire.

Furnaces, again, are of two kinds. One is called the tank-furnace and in this glass is melted in hollow spaces built in the body of the furnace itself but as the tank-furnaces require great attention and large initial out-lay of money they are not usually built unless it is desired to melt large quantities of glass of only a cer-

tain kind. In Europe and elsewhere tank furnaces are generally found only in factories which manufacture bottle-glass. By far the most commonly-used type is of the pot-furnace. A-pot furnace does not, in the first place, require much initial outlay. It affords great facility on account of the crucibles (*i.e.*, the pots in which glass is melted) being put in and removed at will.

Crucibles are of different capacities varying, ordinarily, between two and six maunds and as several of them can be put in a furnace, glass-makers can easily prepare different kinds of glass at one and the same time, which is a great convenience particularly for small factories that have to cater for different tastes and in different coloured articles but are unable to have many furnaces.

Crucibles, too, are made of fire-clay. Raw and burnt fire-clays are ground and mixed together in proportion of about 7 to 9, respectively, but this proportion varies according to the relative qualities of clays used. The clays are mixed together well when still dry. Water is then poured on them and they are kneaded or treaded well by human feet. The later process is, however, common on account of a supposition being prevalent that the elasticity and warmth of men's feet gives the paste a particularly gluey character. The paste is allowed to rot for about a week.

The crucible used for ordinary glass is open at the top and its walls slightly incline out-wards as they go up, but for fine glass covered pot is preferred in order to avoid unburnt carbon particles or pieces of clay from the crown falling in and spoiling its quality. The covered pot is provided with a hole on one side through which raw materials are put in and glass taken-out. A fixed and even temperature is maintained in the room in which crucibles are made. Indeed, in winter season it is desirable to artificially heat the room in order to keep the air within at an uniform temperature. After the pots are made, they are generally allowed to dry and mature for about four or five months before being used. They are then put in a baking oven and the heat cautiously increased, until, gradually, in about a week's time the temperature is raised equal to that of the melting furnace itself. The old pots are then taken out of the (melting) furnace and new (baked) ones put in. The removal of old pots and the putting in of new ones is a work of great courage and pluck. The pots besides being very heavy are so hot and the heat of the furnace is so strong that it becomes very difficult to properly handle and control them. After they are put in the furnace the crucibles are glazed all over with molten glass so that they may become less susceptible to actions of alkali, which is a most dreadful enemy the pots have to contend against. It persistently attacks the crucibles and is sure to corrode in if there happens to be any weak spot in the sides or base. When alkali has once succeeded in making a breach, it mercilessly continues its onslaughts and makes the aperture deeper and deeper so that a hole is eventually pierced

through and glass flows out. Numerous devices are employed to patch up these holes but a pot is practically done for when a hole is once made in it.

The length of the time required to reduce raw materials to glass depends on the size of the pot and the intensity of heat available. In our Glass Works at Amballa we have at present pots of about five maunds capacity and have a heat of about 1100 deg. Farh. It takes us about fourteen hours to melt an entire pot of metal (glass). When melting operations are complete, the temperature of furnace is reduced a little to enable the glass to solidify a bit. It is then taken out and moulded in the desired shapes and forms.

The articles thus made are necessarily very hot and as a sudden reduction of temperature causes cracks and breaks a process of gradual cooling is gone through, for which purpose they are put in annealing ovens where a small fire is kept burning at the time but it is later on reduced and eventually extinguished. In Japan the annealing is done by putting glass articles in beds of sand or ashes. Here, too, this method would suit very well if some cheap method of first heating the sand could be found out.

After annealing the glass articles are given the necessary finishing touches and sent to market for sale.

Skilled Labour and Future Prospects.

The glass-making industry has a great future before it in this country, but many difficulties have first to be surmounted. The supply of skilled labour is for the present a problem that stares us in the face. We can never hope to compete with foreign manufacturers if we have to import artificers from abroad. They have usually to be paid cent. per cent. higher wages than what they get in their own countries. We, too, can not reasonably expect them to part with those dear and near to them and leave their homes behind without our compensating for same in the form of increased salaries.

The only articles available here are sand and fuel, and of these, even, there are not many sands in India which may be regarded as pure and in having to powder them from quartz stone the cost runs high. As regards fuel, our coal or wood is certainly not much cheaper than what these commodities cost abroad. Again, most of the colouring chemicals as well as alkaline substances and other ingredients have to be imported from other countries and it will be a considerable time before India would be able to make herself self-dependent in these respects. If we add to this foreign artificers as well, where will our economy lie? Our hope of success must, therefore, rest on our training-up of our own men and for this purpose some of our youths should go abroad every year. The efforts made by the Calcutta Association for Industrial development and other philanthropic countrymen in this direction no doubt deserve our best thanks, but what I

wish to point out is that our present rate of progress falls far short of what the exigencies of the situation demand. In order to fully develop the vast natural resources of our country we ought to greatly augment the number of our young men receiving industrial education in foreign countries.

But even studying abroad is not easy. Foreigners know well that our markets would be closed to them as soon as we begin to manufacture our own articles, hence their reluctance to impart any industrial education to our men. We can not very well blame them for their adverse attitude in this respect for they are naturally anxious to guard their own interests. And it is the lack of sense to understand even the elementary principles of economy and methods of business that has crippled what few industries were even left in the hands of our countrymen. Our youths who proceed to foreign countries for learning industries must, therefore, properly realise their awkward situation and go prepared to put up with all sorts of troubles and difficulties. There is, however, a strong ray of hope and it lies in the transference of a great part of the treasures of art and industries from human hearts to printed books. As long as these secrets were locked in the artificers' hearts there was very little chance of our getting at them but by their publication the way has become much easy and if our students can pick up even the rudiments of industrial knowledge they would be able to greatly expand and improve the same by an intelligent study of books dealing with those subjects. Unfortunately, however, much of the literature on glass-manufacture is in continental languages of Europe which our men can not ordinarily understand.

There appears to be a tendency at present to send boys fresh from colleges. They usually get no commercial education before they go and while their advanced literary (non-industrial) education enables them to learn the technical portion of industries tolerably well, the business or commercial aspects of the same (*viz.*, their adaptability to the Indian soil and resources as well as to the tastes and conditions of our people) remain in a great part unstudied, and on their return home they can not turn their knowledge to full advantage. Many a concern has come to grief in India because its conduct happened to lay in the hands of intellects that were commercially inefficient and on principles that were economically unsound.

It would be well for us to remember that in these days of commercial ascendancy the extent of a country's progress in the scale of international civilisation is greatly measured by its wealth-growing capabilities. We are in the midst of critical times and our country has become an exploiting market for all other enterprising nations of the world. Our hardest battles will, therefore, have now to be fought in the domain of commerce and industries. The nation that has outlived terrible adversities and great trials for thousands of years will succumb to this latest calamity unless

the entire population struggles hard to attain commercial supremacy in our own markets if not in the markets of other countries as well. Starved and emasculated, the vitality and resisting forces of our nation are fast diminishing and we must make a tremendous effort to equip ourselves with the requisite energy and enterprise to supply all, and every one, of our wants by articles of local manufacture. It is evident that no endeavours for the up-building of our nation can ever be perfect or successful unless and until we at the same time set right the economical condition of our country by tapping its industrial resources and keeping our wealth within the land.

I can not better conclude this paper than by quoting Dr. Johnson's description in the pages of the *Rambler* about the fine vistas of progress and comfort opened to humanity by the introduction and use of glass-articles as also of the unpromising beginnings from which most useful productions of art at times arise :—

"Who, when he first saw the sand and ashes by casual intenseness of heat melted into a metalline form, rugged with excrescences and clouded with impurities, would have imagined that in this shapeless lump lay concealed so many conveniences of life as would in time constitute a great part of the happiness of world? Yet, by some such fortuitous liquefaction was mankind taught to procure a body at once in a high degree solid and transparent, which might admit the light of the sun and exclude the violence of the wind, which might extend the sight of the philosopher to new ranges of existence, and charm him at one time with the unbounded extent of material creation, and, at another with the endless subordination of animal life, and, what is yet of more importance, might supply the decay of nature and succour old age with subsidiary sight"

"Thus" continues Johnson in his own grand and mellifluous style of expression, "was the first artificer of glass employed, though without his own knowledge or expectation. He was facilitating and prolonging the enjoyments of light, enlarging the avenues of science and conferring the highest and most lasting pleasures; he was enabling the student to contemplate nature and the beauty to behold herself."

CO-OPERATIVE CREDIT SOCIETIES

By K. C. DEY, ESQ., M.A., I.C.S.,

*Registrar of Co-operative Credit Societies,
Eastern Bengal and Assam.*

For many years the chronic indebtedness of the agriculturists in India leading to their utter ruin in not a few cases, has been attracting the serious attention of the Government of India, and many enquiries were instituted with a view to devise means of alleviating their distress. Different experimental measures were adopted in some provinces and after a great deal of deliberation, the Government adopted the institution of Co-operative Credit Societies as one of the remedies of this great evil. In 1904, an Act was passed in the Supreme Council called the Co-operative Credit Societies Act (X of 1904). And although two years have passed it is to be regretted that the provisions of this Act, and the various concessions and facilities granted to the Co-operative Credit Societies by Government are still unknown to the great mass of the people.

2. It is known to all conversant with the agricultural villages in this country, how the common cultivator lives in debt, year in and out, and is only too often ruined entirely by the *mahajan*. In many parts of the country, the actual cultivator of the soil has gradually lost all permanent interest in the land he cultivates and has become either a labourer working for wages or only a *bargadar* or an *adhidar*, a yearly tenant who gets half the produce or less as wages. In a great many cases has the original cultivating lease been acquired by the middleman who does not till the soil himself but lives on the produce of the toil of the rack-rented sub-tenants or ill-paid labourers. In the districts of Eastern Bengal, the subinfeudation of the tenures has become notoriously vast and complicated, and all over the province the cultivator seldom gets the full benefit of his labour and the fertility of the soil. In most cases, the cultivator is deeply in debt to the *mahajan* and can hardly hope to ever get out of his clutches. At harvests, he is compelled in a great many cases to sell his produce to the *mahajan* at the *mahajan's* rate and is cheated only too often in the weightment as well as in the rate. The bulk of the money he earns goes to pay the rent and the too heavy interest on his former loans. Between harvests the poor man has to borrow again for the necessities of life, and this hopeless cycle of heavy borrowings and meagre repayments plunges him deeper and deeper in debt.

3. Nor is the case of the poor artisan in the villages any better. The weaver, the boat-builder, the blacksmith are all in

the same state of chronic indebtedness. For the purchase of raw materials the artisan has to borrow, and so pressing is the demand of the *mahajan*, that he is compelled to sell off his manufactured produce at once at what price he can get, too often to the *mahajan* himself. He has to borrow for his food and his clothing, for the payment of rent, for every necessity and luxury of life. Thus his ceaseless labour does not benefit him much and only serves to enrich his *mahajan*.

4. The fact is that for agriculture and petty industries, the cultivator or the labourer in the villages possesses no capital of his own. He has money to buy land, cattle, implements, or raw materials and he has no money to supply him with the necessities of life till he can sell his produce in the best market. He has to borrow his capital and he borrows it at an exorbitant rate, and too often he cannot get sufficient capital for his needs. Sir D. M. Hamilton, a former President of the Bengal Chamber of Commerce, expressed these circumstances very tersely. He said that one must buy one's finance cheap and sell one's produce dear, to make one's industry profitable, but the Indian cultivator buys his finance dear and sells his produce cheap and the consequence is that he is imposed on at both ends and lives in poverty with scarcely any hope of bettering his position.

5. The reason for this deplorable state of affairs is to be found in the villager's want of thrift. He never knows how to save money, and as his income is chiefly derived from one or two harvests, he cannot make the money obtained by sale of the produce, last the long intervals between them. Want of training how to save and put by, the hereditary instincts and customs of extravagance at weddings and other ceremonials and above all, the want of a safe place where to keep the savings, all these contribute to the absence of thrift among the poor in our country. When the man is able by hard work to save a few rupees, he knows not where to keep it safe. He generally buries it under the ground where it lies unproductive for years—and he is too often robbed by the thieves, or dies without being able to tell any one where the hoard is concealed.

6. Again the capital available for financing these people in the villages is not considerable. The *mahajans* very often are poor men themselves, dependant on the profits of their usury for their own maintenance. While a rich man can easily obtain loans of thousands of rupees in a city at 6 to 8 per cent., the poor man in the village cannot obtain accommodation of ten or twenty rupees at less than $37\frac{1}{2}$ per cent., although the security he offers is no less sound than that of the rich man. The prevailing rate of interest at which a villager borrows money in this country is $37\frac{1}{2}$ per cent. per annum, or two pice per rupee per month. In some parts of the country, the rate

risers so high as 75 per cent. and not seldom have I come across rates of interest at 150 per cent. per annum.

7. Thus it will be seen that the problem before us is as vast and complicated as difficult of solution. No amount of State aid or philanthropic help can be of much effect, for obviously it would be no use paying off the poor people's debt unless they are taught not to fall into it again. Capital has to be provided in sufficient quantity to free the agriculturists from the existing debts at usurious interest and then to supply funds for the purchase of implements, cattle, seed, labour and raw materials, and also for maintenance till the produce can be sold in the most advantageous market. This capital has then to be made available to the people for whom it is intended, with security to the capitalist and facility and safety to the borrower. The credit thus afforded should then be safe-guarded from possible abuse and means must be devised to secure that no credit is given to undeserving persons or for undeserving purposes, and that the loans given to deserving persons are employed on useful and necessary purposes. The capital should not only be brought near the houses of the people but should be made available at a rate of interest which will leave a fair margin of profit to the individual who employs it. Lastly the individual must be taught thrift, the habit of saving encouraged, and a safe place provided for the custody of the savings. The villagers have to be taught habits of business and reliance on their own selves, for any extraneous agency to work the capital must fail. One of the solutions that has been found by Government satisfying all these requirements, is the Co-operative Credit Society.

8. A Co-operative Credit Society is primarily a society composed of a number of persons who co-operate or combine their credit together, for the purpose of obtaining cheap and facile financial accommodation for themselves or in other words, it is a joint stock bank, the capital of which is subscribed by the members themselves or is borrowed on their joint credit and is employed only on loans to themselves. A single villager cannot get a loan except at a very high rate of interest, and he cannot successfully approach a wealthy capitalist or a joint stock bank who deals in hundreds of rupees and will not deal in small sums. But if a number of villagers of good and honest reputation form a credit society, and agree jointly and severally to stand security for all the debts of the society, then the society can approach the larger capitalist and obtain a lump sum as loan at a small rate of interest. Even the smaller capitalists, the local money-lenders, will recognise the advantages of lending a large sum to one body, and will be satisfied with the smaller profit and reduce their rate of interest. From the lender's point of view, the co-operative credit societies will offer excellent investment. The security is good, as the joint and unlimited

liability of a large number of people is pledged. One or two of the members may fail, but the others remain and the likelihood of the security proving useless is reduced to a minimum. Instead of a large number of petty accounts to keep, only one account need be kept for one village. Instead of having to collect little sums from a large number of poor people, regular instalments from a well ordered society will be collected with punctuality and ease. Instead of incurring large expenses and suffering great worry, trouble and much loss of time in suing many petty debtors only one suit, if ever necessary, will have to be instituted against one corporation and the security being so ample the decree will be even more easily executed than against any individual debtor. It is certain that in most places, as soon as the people understand the principles, the capital for these societies, will be forthcoming. For it must be remembered that though all men are not philanthropists, they are not all usurers. There are thousands of people whose money is locked up in Post Office Savings Banks or in Government Securities, bearing interest at 3 or $3\frac{1}{2}$ per cent., who will be glad to invest at least part of their savings in the Co-operative Credit Societies at 6 or $6\frac{1}{4}$ per cent., if their security and advantages are made known. The Societies already established have got all that they require at present at 6 to $6\frac{1}{4}$ per cent., and two societies have actually refused to accept offers of large loans at these rates, as the money was not needed by the members.

9. The Societies will also be capital savings banks for the members. The societies will never refuse to accept deposits from members. Whatsoever money a member may save can be safely deposited with the society, and the society will give him a very fair interest, say 6 or $6\frac{1}{4}$ per cent. per annum. When a cultivator sells his jute or mustard seed or sugarcane, he pays his rent and then either squanders the remainder in purchasing unnecessary luxuries, or buries it under the ground. Sometimes he starts money lending on his own account and often loses his money by injudicious loans. But if he deposits his money in the society, the society will pay him a fair interest regularly and will carefully invest the money for the benefit of his fellow-members. When the cultivator understands this, he will learn to save and deposit his money regularly. In some societies, there is a rule of compulsory saving, each member being required to deposit after each harvest a certain amount proportionate to his land or to the number of ploughs he keeps. The Government has offered, as an additional incentive to thrift, to lend to Co-operative Credit Societies a sum equal to what the members raise by their deposits free from interest for three years and thereafter bearing interest at only 4 per cent. per annum.

10. With the capital obtained from deposits of members, loan from Government and borrowings from the large or small capitalist, the societies will have enough funds to work with.

The capital however, will be employed only for issue as loans to members and for no other purpose whatsoever. The loans shall be given to members only and to no others. Loans will be given out carefully, for the actual needs of the borrower and not for the purpose of squandering on unnecessary luxuries or evil purposes or for re-lending to others. Neither the law nor the bye-laws will in any way limit the purposes for which the loans may be granted. But it is left to the good sense of the members themselves to grant or withhold and loan. Each member will remember that he is personally liable for the whole of the capital of the society and thus every member will naturally strive to prevent the giving out of loans on insufficient security or for undeserving purposes. Loans will be granted for all productive purposes, for maintenance, for payment of rent, for repayment of older debts and for the absolutely necessary expenditure on marriages and other ceremonial occasions. No one except the members themselves know accurately whether a man really requires a loan or not, and how much he requires for his needs. A loan for a purpose approved of by the members is sure to be granted, and it is almost equally sure that it will be usefully employed. As the lenders are co-villagers, the borrower's own people, there would be great facility and expedition in obtaining the loans and as in a village, it is scarcely possible for an individual to keep his affairs secret from the fellow-villagers, it will not be difficult to ensure that each loan is employed on the purpose for which it was intended. Again the members will know the circumstances of each applicant exactly and will thus decide in a way satisfactory to the applicant as well as to the society when and by what instalments the loan is to be repaid. If the borrower has got jute and mustard cultivation, the loan will be made repayable after the jute and the mustard harvests. If he has paddy and sugarcane, the loan will be repayable after the paddy and the sugarcane are sold. Loans thus carefully granted for actual needs and on suitable terms will be to the immense benefit of the borrower and safe investment to the society.

11. The law does not fix the rate of interest payable on loans. The authority is vested by the bye-laws in the members themselves. They are to fix the rates of interest payable to the society on loans issued as well as that payable by the society on deposits and borrowing for each year. The rates will depend on local circumstances. The rates will vary not only in different societies, but in the same society from year to year. If there is a heavy loss one year, the rate of interest payable to the society will be raised and that payable by it to the members on deposits lowered until the loss is recouped. If there is general distress in the village the rate payable to the society will be lowered. The rate of interest payable by the society on outside capital will depend entirely on the credit of the society and the capital available in the locality. But for the purpose of creating a

reserve, the rate charged by the society must be slightly above the rate payable by it. If capital is obtainable at $6\frac{1}{4}$ per cent., the rate on loans may be fixed at $9\frac{3}{8}$ or $12\frac{1}{2}$ per cent., the excess being kept for the purpose of creating a reserve. The members who deposit their savings get a fair interest on their money and on the rest of the capital raised proper interest is paid, so all the profit that the society makes by lending at a certain rate money obtained at a lower rate, will go to what is known as the Reserve Fund.

12. The purpose of the Reserve Fund is three-fold. If there is ever any loss or remission, the Reserve Fund will bear it. But if members are chosen with care, and fraudulent, dishonourable, bankrupt and spendthrift people are kept out of the society and if loans are granted with due caution, there is no likelihood of any loss ever accruing. Up to date, there has not been any loss in any society established in this province or in any other province in India. In Germany where this system has been tried with immense success for over 50 years, "not a pfening has ever been lost either to creditor or to depositor." So in France "not a sous has been lost" and in Italy "the losses have altogether been trifling; in time of economic crises less than those of other banks." The next purpose is for the creation of additional credit. If the society can show that it has so much money kept safe as a reserve the capitalists will be much more willing to invest their money in the society than otherwise. A reserve of cash is so much more easy to realise than even the whole of the landed property of all the villagers. Lastly as the Reserve increases, there will be less and less necessity for the society to make profit, and the rate of interest payable on loans issued by the society will be gradually reduced. When the Reserve reaches a certain amount, safe enough for the society, all profits since accruing will be used as capital, and less money will have to be borrowed and the rate of interest payable on borrowings will be reduced to a minimum. Eventually it is expected that the societies will work with the capital consisting of their own profits and the deposits of the members, and the members will be enabled to get loans at so low a rate of interest as 3 or $3\frac{1}{2}$ per cent. The Reserve Fund will at all times be indivisible among the members. But if a society is ever closed or wound up, the balance remaining out of the funds after payment of all liabilities will be employed on such useful public purpose as the members may decide. The provision is necessary to prevent the members being ever tempted to close the society for the purpose of dividing the accumulated profits among themselves.

13. The loans will be given to the members only, and as all the members and their circumstances, position and income are quite well known to all other members, the security re-

quired will not be prohibitive. In many cases, no security of any kind will be necessary. In many others, the personal security of a brother-member will be sufficient. In some cases it may be found necessary to accept security of landed property. But these cases will be rare. In no case, however, moveable property should be taken as security, for the difficulties of testing and custody are in most rural places insuperable and the chances of the society being imposed on are very great.

14. If the members are chosen with care, and if they are honest even if they are very poor, there is no chance of any loan being lost. The other members, when they realise that they are each and every one responsible for the whole of the capital of the society, will see that the borrower pays up his dues in time. If owing to circumstances beyond his control, a borrower cannot pay up his dues in time, his brother-members knowing the reason for default will give him time to pay up and in extreme cases may even remit the debt. But the brother-members are sure to know if the borrower defaults purposely when he is able to pay, when not only will they at once sue him for the debt and pursue the suit to the bitter end, but levy a penal interest and remove the fraudulent borrower from the benefits of the society. No special summary procedure has been prescribed for recovering loans from members as such concession is liable to abuse and is likely to scare the less intelligent cultivators. But it is extremely unlikely that if the members do their duty, a suit will ever be necessary. In no case has a suit ever been brought by any society in this province or in any other. As a matter of fact, members must be chosen with such care that no loan may be lost and the loans should be given with such circumspection and the conditions of repayment made in such a way that no default will be probable.

15. To encourage the formation of these societies and help them to get on, as well as to simplify their proceedings, the Government of India has granted several concessions. I have mentioned before the generous terms on which advances will be granted by Government to the societies. Besides this, all deeds executed by or in favour of the society are exempted from the payment of stamp duty. When documents by or in favour of the society are registered, the registration fees are remitted. The income-tax on all profits by the society or by its members in dealing with the society is remitted. There is no fee charged by Government for the registration or incorporation of the society, and the stamp duty on the Articles of Association is remitted. The accounts of the societies are audited by the Registrar once every year free of charge, and his advice is always at the service of the society. The Post Office Savings Bank which is not open to any other companies has been opened to these societies for the safe custody of their money and the conditions of such custody are more convenient than those for

private persons. Besides the absolute safety, there is another advantage in such custody, namely, that all the surplus funds of the society earn interest at 3 per cent. per annum so long as they remain in the Post Office Savings Bank. According to the Rules made by our Government, any entry in the books of account of any society can be proved in any court of law by the production of a copy of the entry certified to be true by the Chairman. No officer of Government except the Registrar and the Collector or any person specially authorised by the Registrar or the Collector is empowered to inspect the societies so that there is no fear of undue interference of the petty officials of Government. The restrictions and obligations imposed on the Joint Stock Companies by the Indian Companies Act are not applicable to those societies. Extreme latitude is given to them in the making of their own bye-laws including rules of procedure in fixing the rates of interest to be levied and paid and in all matters of internal administration. The money due to a member is paid after his death to any person whom he nominates in accordance to the rules, so that the heirs of members are spared the cost, delay and trouble of obtaining a succession certificate.

16. The Act also provides for the formation of Co-operative Credit Societies for the assistance of the needy people who are not agriculturists or who are not residents of villages. These societies are called Urban Societies while those described in the preceding paragraphs are called Rural Societies. In a rural society at least four-fifths of the members must be agriculturists and in the urban societies at least four-fifths of the members must be non-agriculturists. There is another important difference between these societies. Whereas the liability of the members of rural societies, should almost always be unlimited, in urban societies it may be limited or unlimited. Usually we find that the residents of the towns have not all their property situate within the town, nor are their circumstances and dealings known to each other so well as in the villages. Hence in many cases, it is difficult to find men in towns who would be willing to co-operate their credit on the basis of unlimited liability or in other words take on themselves the responsibilities of the debts of others. The liability of the members of the society can however be limited to the amount of the share held by each. The capital of a society of limited liability is derived chiefly from the value of the shares subscribed by the members. The shares are usually of small instalments at sufficiently long intervals. Every member must own at least one share and no member can hold more than one-fifth of the total number of shares, nor shares representing a nominal value of over one thousand rupees. The shares are not heritable, but the value of the share is paid to the nominee of the member after his death, like all other dues. When any person ceases to be a member of the society, the value of the share is refunded to him.

The shares are not transferable except with the permission of the society and even then only to another member of the society. One-fourth of the profits of an urban society goes into the Reserve Fund and the balance is paid to the members as dividend on the shares. In all other respects the urban societies are similar to rural societies. These societies will much benefit the petty artisans, such as weavers, the petty tradesmen, the lowly paid clerks and the smaller professional men who work in towns. In many cases it is likely that these societies will, after supplying the needs of their members have some surplus money in hand. The law provides for the employment of such sums in financing the rural societies in the neighbourhood.

17. I have dwelt on the economic advantages of the system of co-operation in these credit societies. But this is not all the good that comes from them. Wherever these societies have worked with success, "a new world has been called into existence to redress the balance of the old." I look forward with hope to the time when these societies will work wonders in elevating the social and the moral tone of the village communities in this province besides providing and organising the village finance. The time will come when the people of a village, who in the former times used to take scarcely any interest in anything outside their own threshold, who used to spend their scanty savings in extravagance, litigation or purchase of unnecessary articles of luxury or to hoard them profitlessly will learn how to save and employ the surplus funds for their own profit and for the benefit of the fellow-villagers. It will create "a new world—a world of brotherly love and mutual help, where every one is the protector and assister of his neighbour." The principles underlying credit and trust will infuse a new spirit in the careless and thriftless villager and kindle in him the desire for standing well in the eyes of his neighbours. One may hope, that, as in other countries, under the influence of these societies, the idle man will become industrious, the spendthrift thrifty, the drunkard will reform his ways and become sober and the illiterate will learn to read and write."

18. It will no doubt take a good long time before we can attain the stage of such perfection. The movement is still in experimental stage in our country and has scarcely taken a firm root. We require the active co-operation of the intelligent and educated community to make Co-operative Credit Societies a common national institution in every village, a luxurious growth spreading into the remotest corners of the empire. I cannot over-estimate the immense educative results of these noble organisations which the Government has given the first impetus to and which I sincerely hope will throw open the door of renewed national prosperity. I appeal to every one of my countrymen to assist and encourage this cause with his co-operation in work and in means within his own sphere of influence.

A CENTRAL BANK TO FINANCE CO-OPERATIVE CREDIT SOCIETIES,

BY K. C. DEY, Esq., I.C.S.,

*Registrar of Co-operative Credit Societies,
Eastern Bengal and Assam.*

In another paper which I had the privilege of reading before this Conference I have described what Co-operative Credit Societies are, what they purport to do and the methods of their working. Co-operative Credit Societies are institutions for the purpose of conserving the wealth of the country and employing that wealth to the greatest advantage to the people of the country. The movement to introduce these institutions in our country ought therefore to receive the earnest sympathy and assistance of all people who have the good of their country at heart.

2. These institutions are primarily the associations of the men of limited means, who can not under the existing circumstances command sufficient capital for their needs, or obtain it with sufficient facility or at sufficiently moderate rates. They are meant to finance the cultivators and weavers and other artisans in the villages and the small tradesmen, petty dealers and other people of limited means in the cities. The primary idea is that when these people band themselves together in a Co-operative Association with unlimited liability, that is, pledge all that they own and jointly and severally undertake the responsibility of the whole of the liability of the Association, they create for themselves a collective credit far in excess of the sum of the individual credit of the members. Theoretically such Associations ought to be able to command in this way capital sufficient for the actual needs of all the members at a sufficiently moderate rate of interest, and in the ideal stage, they are expected to fulfil their highest ambition "every man his own banker."

3. The difficulty in this country in the popularising of such institutions consists firstly in making the people of small credit who are proposed to be benefited, understand the enormous advantages of co-operation and agree to join the Association with unlimited liability. But this difficulty is not insuperable, and wherever an attempt has been made in any rural area, and the entire internal administration of the affairs of the Society is vested in the people themselves, the fears of unlimited liability have vanished and people have come forward to form societies. For in these rural area, the people know each other and the material circumstances of each other very well and if the right of selection of the members and the right of deciding the terms and conditions of the loans issued are left entirely in their own hands, there is never any fear of any loss, the conditions of unlimited liability present no terrors and the responsibility of the whole liability makes them only more careful in their transactions. This has been the experience not only in the Province of Eastern Bengal

and Assam, but all over India, and the very rapid increase in the number and the membership of these Societies all over the country proves that where properly taught, the Indian agriculturists are not backward in appreciating and taking advantage of the principles of co-operation as applied to credit.

4. The second difficulty in the formation of a large number of these Societies lies in the financing. The members of these Societies are men of limited means and they join the Society primarily for the purpose of borrowing. It is seldom that they have money to deposit, sufficient to meet the needs of all the members. Such of the richer villagers as do join the Society not for the purpose of immediately taking loans but for the purpose of doing so, if circumstances ever require, can not or will not deposit all their savings in the Society. For, although, having the right of selection of members and control over loans in their own hands, they do not hesitate to undertake the unlimited liability, yet they are habitually conservative in thought and action and are reluctant to put all their savings in an institution, which though entirely managed by them, is quite new and beyond the sphere of their knowledge and experience. It has been found in the actual working of these Societies that the deposit of the members amounts to very little in the beginning, but it steadily increases as the Society grows older and the deposits are invariably put back into the Society when the period of the first instalment expires. The confidence of the members increases as they see, the Society working wisely and with profit to itself and benefit to the members themselves. But in the very beginning it is hard to raise sufficient capital from the village itself. There is no Society in the Province of Eastern Bengal and Assam which has begun solely with its own capital. All the Societies have taken loans from Government, but as these loans can not exceed the amount which the members deposit themselves, they have not very materially helped in increasing the funds. In almost every case, the Societies have had recourse to outside help in the shape of loans from or deposits by non-members, such as educated philanthropic neighbours or Zamindars.

5. In order to facilitate the formation of new societies and finance those already established, one of the remedies that has been attempted in some provinces is the formation of Joint Stock Banks to lend money solely to Co-operative Credit Societies. The capital of the Banks is raised in the very beginning by shares taken by its constituents, and then as occasion requires, by the issue of debentures on the security of the unpaid share capital and the Reserve Fund. The Banks are Joint Stock Companies with limited liability but they are registered under section 6 of the Co-operative Credit Societies Act (X of 1904), and thus obtain all the privileges—and concessions granted to Co-operative Credit Societies. These Banks like other Joint Stock Banks, are managed by Directors elected by the shareholders. The funds of the Banks

are employed in giving loans to the existing or newly formed small Co-operative Credit Societies in the interior. The risk of loss in these Societies is minimised by wise provisions which are fully described in my paper on Co-operative Credit Societies. The risk of loss to the Central Banks is thus also reduced considerably. Instead of individuals lending money to individual Societies, they take shares in or buy debentures from the Joint Stock Central Banks, which deal with the individual Societies. The risk of loss to the investor will thus be as little as possible.

6 There are many such District and Central Banks in the United Provinces of Agra and Oudh, some of them with capital exceeding a lakh of Rupees, which are financing hundreds of smaller Banks. In the Cities of Bombay and Madras such Banks have been recently established and promise to work very successfully. In the Province of Eastern Bengal and Assam there is already one such Bank which besides accommodating its members is financing the rural Co-operative Credit Societies established in the District and another such Bank on a slightly larger scale has been recently established. But the Banks in this Province are of extremely limited resources and they have not much scope for extensive work, and a large Provincial Bank on the model of those of other provinces will be of much assistance.

7. I do not intend to take up the time of the Conference with a detailed description of the methods on which the existing Central and District Banks are working or the way in which these Banks may work, but I only wish here to submit this scheme in the briefest possible terms. If the idea takes root in the minds of the thinking public, I shall be ready to place before them all the information I can furnish and my services will be at their disposal in any way in which I can further the working out of this idea.

A BIRD'S-EYE VIEW OF INDIAN SERICULTURE,

BY

BABU NITYA GOPAL MUKERJI, M.A., M.R.A.C. & F.H.A.S.

I.—Preliminary.

Great interest has been taken in the subject of sericulture by our Government, by Native States and by private individuals, within recent years, and considerable progress is to be seen in different local areas, which makes it incumbent on us to consider the question of a more general adoption of improved methods, and to get a clearer view of the situation as it stands at present. In Bengal, in parts of Maldah, Birbhum, Murshidabad and even in Midnapore (where the industry has almost died out), the silk-rearing peasants now recognise that their salvation lies in the following of scientific methods of sericulture. For the past fifteen years, for instance, more than a dozen cultivators have been using the microscope with success in obtaining seed-crops, and the silk rearers of a village in the Garhbeta Thana of Midnapore, called Uparshol, where a nursery on a scientific basis has been started, have been trying to get a similar nursery started for them at Puni-shol in the district of Bankura. These two villages exchange seed with each other, and they have come to recognise that the establishment of a seed-rearing nursery in their own village alone is not sufficient to benefit them. For the sake of a parasitic fly, it is impossible in Bengal to rear silkworms successfully for two generations successively, and the people of one district must go to another district, or to a very distant, but recognised, place in the same district for seed. To benefit one part of a country, both parts must be taken in hand at once. This is one of the many examples which shows the importance of understanding the subject, if the cocoon-rearing industry is to be benefited. The starting of nurseries at a haphazard is not enough. We have defects to remedy not only in Bengal, but in Kashmir, in Mysore, in Baroda and in some other parts of India where the industry has been taken up of late years, and where more or less progress has been achieved, notwithstanding faulty application of the scientific system.

2. It is very necessary, therefore, that a succinct and clear account of sericulture should be at hand, which would obviate the necessity in the first instance, of reading up various books and reports that have necessarily sprung up with the 'recent' activities. While I call these activities 'recent,' they are at least 20 years old, and more progress might have been achieved if the im-

provements had been introduced with sufficient knowledge of the subject. A rude shock is sometimes received, when a party, which has been rearing the Eri silkworms, finds out he ought never to have attempted the task in the particular climate, or where a man who has been trying to introduce the Japanese mulberry, finds out that the tree he has been using is not mulberry at all, but a so-called "paper mulberry" which silkworms never eat, or where a man who has been using the microscope for years in eliminating Pebrine finds out that there is no Pebrine at all to eliminate, or when for years seed, which has been accepted as rigorously "cellular" and free from disease, is found out to be really full of Pebrine. The history of the application of scientific methods in various parts of India, is replete with such examples of mistakes.

3. I do not disparage by any means the literature that has grown up within recent years, and I may say, the bulk of it is from my own pen; but it is necessary to keep the main points in view with regard to the development of the mulberry, the *tusser* and the *eri* silk industries, and this is my plea for adding another 33 pages to the already existing literature on the subject.

II.—Classification.

4. Various classes of silkworms are reared, some indoors and some on trees in the open, which spin cocoons, out of which silk is obtained of various classes. Silkworms fall under two main groups—the Bombycidæ and the Attacidæ. The former make reelable cocoons and the latter unreelable ones, which have to be carded and combed and spun into yarn, like cotton. The mulberry feeding silkworms and the *tusser* silkworms of commerce all come under the Bombycidæ, while the *Eri* silkworms belong to the Attacidæ. The *Attacus Atlas* which is the largest cocoon of all, out of which come the most magnificent moths, are unreelable and practically worthless wild cocoons.

III.—The Mulberry Silkworm.

5. The mulberry feeding silkworms, which are the most profitable of all to rear, are divided into the following groups:—(1) the *Bombyx mori* or the annual silkworms reared in Europe, China, Japan, Kashmir and some of the Western Asiatic countries; (2) the *Bombyx textor*, or the *Barapalu*, the annual silkworm of Bengal, the cocoons of which are flossy and not hard like the *Bombyx mori* cocoons, and the eggs of which do not require such intense cold as the eggs of *B. mori* for their hibernation; (3) the *B. Arracanensis* of Burmah and the *Barapât* of Assam which are closely allied to the *B. textor*; (4) the *B. Meridionalis* of Mysore and Kollegal, which yields 7 or 8 crops of cocoons in the year instead of one, the cocoons being greenish white and almost as good as *Barapalu* cocoons; (5) the *B. Crâsi* (*Madrasî* or *Nistari*), the golden yellow cocoons, which breed eight times in the year in

Bengal and which produce very fine and soft silk ; (6) the *B. fortunatus* (the *Deshi* or *Chhotopalu*), a brighter yellow cocoon of Bengal containing a larger proportion of stronger silk than the *B. Cræsi* silk ; and (7) the *B. Sinensis* or the *China* cocoons, which are the smallest yellow cocoons of all, reared in Midnapore. There is a white variety of *B. Sinensis* also reared in Midnapore, which is called the *Bulu* ; (8) the *Theophila* cocoons found on the mulberry trees in the Himalayas are wild.

IV.—Tusser Silkworm.

6. The tusser cocoons are also divided into several groups, of which the *Antheria Yamamai* of Japan which yields a greenish white silk, somewhat rougher and coarser than white *B. mori* or *B. textor* silk, is the best. The *Antheria pernyi* or the *China* tusser, comes next. The *Antheria assama* or *Muga* of Assam is just as good as the *China* tusser. The *antheria mylitta* or the *Bengal* tusser proper, comes last. The tusser of *China* and *Japan* is reared on oak-trees. The *Muga* of *Assam* is reared on the *Sum* (*Machilus odoritissima*), the *Sualu* (*Tetranthera monopetala*), the *Mejonkuri* (*T. polyantha*), the *Champaka* (*Michelia champaka*), and other trees. The *Bengal* tusser is reared chiefly on the *Asan* or *Sáj* tree (*Terminalia tomentosa*), a tree which can be freely polarded, also on *sal*, *arjuna*, *sidha*, *dhau*, *baer*, country-almond and other trees. The moths from tusser cocoons come out very irregularly, specially when the cocoons are large and strong, some coming out within three weeks of their formation, while others may not come out for two years. This accounts for tusser rearers choosing thin and small cocoons for seed, as eclosion of moths from such cocoons is more regular. An experiment conducted by the author, that large and hard cocoons can be used for seed if the chrysalids are extracted from the cocoons and kept exposed or buried in sawdust. This is one important step which can be taken in ameliorating the condition of the tusser silk-industry, which is going down on account of disease. The use of genuine wild cocoons for seed is another step.

V.—The Bengal Tusser.

7. There are three main classes of *Bengal tusser*, the *Narya*, the *Daba* and the *Bugui*. (1) The *Narya* is obtained out of the small sized cocoons, generally wild, though domesticated cocoons are often fraudulently sold as wild cocoons. From the wild or domesticated *Dhuria* or summer cocoons of *June* are obtained an *Ampatia* or flimsy crop of cocoons in *July* and *August*, and from this *Ampatia* crop is obtained the regular crop of the year, the *Barsati* crop, in *October*. A *Jaddui* or cold weather crop of *Narya* is also sometimes taken ; but it takes nearly three months taking a *Jaddui* crop. (2) The *Daba* is now always taken from the domesticated stock and not from the wild stock, but it can be taken and ought to be taken from the wild stock, though, being the

strongest breed of all, the domesticated *Daba* does not give such hopelessly bad results as the domesticated *Narya*. The origin of the *Daba* cocoon is probably the *Muda Muga* cocoon i.e., the large wild cocoon that does not cut in August or September of the year they are formed, but in the following June or July. In September or October such large and uncut cocoons can be picked out in *hâts* from among pierced seed-cocoons, and they ought to be looked for and reserved for seed till next June, when moths will come out of them, lay eggs as in the case of other tusser cocoons, and give an *Ampatia* and a *Barsati* crop of healthy *Dabas*. Some of the largest and hardest *Barsati* cocoons can be reserved for seed till next June, and the domesticated breed kept on until disease appears among the stock, when the wild stock must be resorted to again, in the manner already described. (3) The origin of the *Bugui* is the large-sized wild tusser cocoons (called *Barra*), out of which moths cut out usually in September. It yields one crop of cocoons in November and December. Thus *Bugui* breeds once in the year, *Daba* twice, and *Narya* three times. The cocoons obtained from October to January, are the best, and those from July to September, are the worst. When the *Barsati* cocoons are selling from Rs. 8 or Rs. 10 a *kahan* (=1,280 cocoons), the *Ampatia Naryas* or *Dabas* would sell for only Rs. 2 to Rs. 3 per *kahan*.

VI.—The Rearing of the Tusser Silkworm.

8. The method of rearing of all the three classes of tusser cocoons is the same. The moths begin cutting out of cocoons about 4 P.M. At 9 or 10 P.M. the male moths fly away. About 3 A.M. those or other male moths come to the female moths. To facilitate the visit of the male moths, the rearer must keep his females out of doors (usually they are kept perched up on bow-like sticks) and watch them against the attack of bats, birds, lizards, etc. The moths remain paired till about 4 P.M., when they either separate themselves or are separated by the rearer, the females being kept pinned down in leaf receptacles, and the males given to domestic fowls. The eggs are collected after three days, and kept in smaller leaf receptacles, the eggs of two or three moths (about 500 eggs) being kept in each receptacle. On the ninth day the eggs hatch, and as soon as they hatch, they are put out on trees in which they are secured by pinning them on to leaves. The trunks of trees should be brushed clean of ants and other insects, and afterwards they are each given a circle of *Bhela* oil to protect the worms from the attack of ants, etc. To each tree about half a dozen to a dozen of seed-receptacles are pinned on at different places, that the whole of the tree may get covered with the worms and not any particular part of it only. The trees have to be kept low for facility of watching the insects against ants, wasps, birds, squirrels, a bug called *chányá*, a mantis, scorpions, centipedes, a large carabidæ beetle called *chka-bundia*, and other vermin. In this matter great care is necessary. The principal

epidemic from which the tusser silkworm suffers, is Grasserie which is a disease which is produced readily, both among tusser and mulberry silkworms by feeding them with leaf, thinner, *i.e.*, sapper, than leaf that the worms have been eating hitherto. As sap rises from the ground, a heavy shower of rain makes the greatest difference of consistency in the leaf in the case of short trees, as by capillary action sap rises to a height of about 4 or 5 feet. No worms should be kept on branches within 4 or 5 feet from the ground, or such branches should be lopped off from the very first. For tusser rearing the annual pollarding should be so done, that all the branches may be above 5 feet and below 10 feet from the ground, that Grasserie may be avoided, while the worms may be kept under close supervision. Another precaution which may be taken to prevent epidemic, is the daily removal and burial of droppings and dead worms from under the trees. A stick with bird-lime (peepul tree gum mixed up with warm mustard oil and kept covered with a bamboo tube when not in use) ought to be always in the hand of the rearer, that he may effectively scare away wasps and birds. A bow and pellets of mud are also of great help. In tusser rearing localities, one scarcely sees a bird, the watch kept by the rearers being so strict. When the leaf of one tree is eaten away, the branches are lopped off with the worms on them and transferred to another tree, or several trees, and this continued until the cocoons are formed. When the cocoons are all formed, they are brought down with the adhering branches of trees, carefully separated from the branches and sold off in *hâts*. When they cannot be sold so readily, they must be killed. For killing the cocoons, they are put inside a *kulsi* (earthen pot), and inside the mouth of the pot a few sticks are inserted, so that when the pot is upset with its mouth downwards, none of the cocoons may fall out. The pot is then put in this reverse condition over another in which water is boiling over an oven. In about half an hour all the cocoons are killed with the steam rising from the one pot and going into the other. They are then dried in the sun and kept for reeling. The effect of domestication of tusser cocoons are:—(1) the cocoons tend to get smaller, (2) they get lighter and lighter in colour, (3) the silk gets finer, (4) the peduncle gets longer and slenderer, (5) the worms get more and more subject to disease. Domesticated cocoons are preferred by weavers, as they produce the whitest and finest cloths.

Reeling of Tusser.

9. The reeling of tusser cocoons is done by patent processes in the European factories in Bengal, soda or potash being the chief solvent ingredient in use and glycerine the substance for keeping cocoons moist while they are reeled. A single person can reel off the silk from 250 tusser cocoons a day in European factories. The native process consists in boiling the cocoons in water to which ashes of Asan, Kenja, or other tree or plant (such

as linseed plant ashes), are added, or *saji*. For 500 cocoons about half a seer of ashes are used, or half a chitak of *saji*. A refined method would be the using of lye instead of the crude ashes. The lye may be obtained out of the ashes by repeatedly passing the water through the ashes kept over a piece of calico, until the water looks oily in appearance. The cocoons may be boiled in this lye for about half an hour. All cocoons are not softened equally by the boiling, and those that do not work off easily while they are being reeled, are kept separate and boiled the next day with a fresh lot of cocoons. Large and hard cocoons require stronger alkali and longer boiling. When the cocoons have been boiled, they are kept in a pot between folds of a cloth over some ashes, and reeling commenced at once. One day's cocoons are boiled in the morning, one person being able to reel from 50 to 100 cocoons a day. The reeling is done with a *latai* on the right hand, and with the left hand fibres from 3 to 5 cocoons are twisted on the thigh, while the *latai* is being wound round with the right hand. As 50 to 100 cocoons are reeled and twisted by the same operation per day, this primitive method cannot be regarded as a very ineffective method of preparing the raw material for the loom. Usually the spinning of tusser cocoons is done in the weavers' families, and it is never done by the rearers as it should be. A *kahan* (= 1,280) of cocoons produces from $\frac{3}{4}$ seer to 2 seers of silk according to quality of cocoons used.

VII.—The Mulberry.

10. The mulberry tree grows wild all along the Himalayas, from Kashmir to Assam, and the mulberry silkworm known as *Theophila*, is found abundantly on these trees. The variety of mulberry found in the Himalayas is very large. From the gigantic *Morus serrata* to the dwarf *Morus indica*, the gradation is slow. Some have soft succulent leaf, others rough, spiney leaf; some have large and abundant supply of fruits, others drop their blossoms and are hardly ever known to fruit. Varieties with large-sized leaves set close to one another on stems, smooth, and thick with gummy sap, and bearing little or no fruits, are the best to choose for silkworms. The *Morus alba*, variety *lævigata*, is one of the best varieties to choose. The mulberries in common use in Bengal and Mysore are the *Morus alba*, varieties *indica* and *sinensis*. The former known as *Pheti* or *Sultani tunt* is the better variety of the two, the gum of the leaf being thicker. It has more palmate leaves, and it requires more manuring and cultivation to keep it in condition. The *Morus sinensis* (the *Kajli* or *Chini tunt*) has thinner and sappier leaves, but it is hardier. It is quite suitable for worms up to their fourth moult, but afterwards, *i.e.*, when the worms are well out of the moult and quite strong, they should be given the stronger *M. indica* leaf. These two varieties do not grow into very large trees, and one of the chief improvements that could be introduced into the Indian industry is the introduc-

of *M. lœvigata* or some other similar superior variety of mulberry, suitable not only for rearing the poor Bengal cocoons, but also the superior *B. mori* cocoons. The tree system of propagation of the mulberry is also more natural and healthy. Trees when once grown up cost little keeping up, while the shrub-mulberry planted $1\frac{1}{2}$ or 2 feet apart costs about Rs. 75 an acre keeping up.

VIII.—Propagation of Mulberry.

11. Propagation of mulberry may be either from seed, or from cuttings, or from grafts. Trees grown from seed produce leaf which, like *M. indica*, is not quite suitable for rearing worms at the last stage. *Morus lœvigata*, *M. Philippinensis*, the European *Morus alba* and other superior varieties of mulberry can be readily grown from cuttings, and propagation is done usually from cuttings only. The best Japanese mulberry, however, does not grow from cuttings, and it is grafted. Though the Japanese mulberry answers to all the requirements of a first-class mulberry, it is no better than some of the best Indian mulberries, and there is no occasion to introduce the Japanese varieties into India. For growing any mulberry from seed, one precaution is necessary. Before sowing the seed, it should be put in camphor-water in a stoppered bottle for an hour, and then sown. Germination is otherwise very partial. Mulberry seed is smaller than grains of mustard, and seed for a large tract of land can be easily sent through post from one country to another. When the seedlings are grown up propagation may go on from cuttings, and thus the first cost of setting up a plantation saved very much. When cuttings are available, propagation should be from cuttings. When trees are sought to be propagated, there should be a nursery on high irrigable land, well dug up, manured and cultivated and protected with ditches and fences. The cuttings or seedlings should be planted in the nursery 9 inches apart, and transplanted on to fields, when 8 or 10 ft. high, at a distance of 20 ft. While transplanting, all the full-formed leaves should be nipped off and all branches within 5 ft. of the ground rejected. Leaf from seedling trees should not be given to worms in their last stage, as it is more sappy.

IX.—Cost of Planting Mulberry.

12. The cost of starting a mulberry plantation of the shrub kind is about the same as starting a mulberry nursery for trees. In the former case the cuttings are planted about $1\frac{1}{2}$ ft. apart instead of 9 inches apart, and four or five cuttings planted at each spot instead of one. The cost of establishing a mulberry nursery, one acre in area, for the first two years, is given below:—

	RS.	A.	P.
(1) Wages of 90 men employed in digging the field with spades in the cold weather, at 3 as. ...	16	14	0
(2) Ditching and fencing (by piece-work) ...	30	0	0

	RS.	A.	P.
(3) Cost of 12 ploughings, the plough-man with bullocks and ploughs being hired, at 4 as. a day	9	0	0
(4) Cost of getting 30 loads (about 30 mds.) of mulberry stalks in September, at 4 as. ...	7	8	0
(5) Wages of 15 men making cuttings, at 3 as. ...	2	13	0
(6) Wages of 15 men making hollows in regular lines	2	13	0
(7) Wages of 45 men planting cuttings ...	8	7	0
(8) Hand-hoeing in October by piece-work ...	1	8	0
(9) Cutting away the first shoots in December ...	1	8	0
(10) Ploughing afterwards	3	0	0
(11) Cost of putting tank-earth as manure in April ...	15	0	0
(12) Ploughing in May	2	4	0
(13) Irrigation (if necessary) in May	15	0	0
(14) Weeding in July	3	0	0
(15) Cutting away of stumps in August or September ...	1	8	0
(16) Ploughing in September	1	8	0
(17) Digging with spades after the November <i>bund</i> ...	7	8	0
(18) Two years' rent	12	0	0
	141	3	0

Expenditure in connection with items Nos. (10 to (18) has to be incurred annually, *i.e.*, about Rs. 75.

X.—Outturn.

13. The first crop of leaf, which is ready in November or December when planting is done in September, or in April when planting is done in February, is cut away, as the leaf is very thin and sappy and not very suitable for silk-rearing. The crops *bund* by *bund* that are obtained afterwards are:—

	value.
24 maunds of leaf (with stalks) in January ...	Rs. 24
36 " " March ...	36
48 " " June ...	24
60 " " August ...	30
45 " " November ...	90
45 " " December ...	45

Total 258 maunds

Total value Rs. 249

XI.—Profitableness of the Silk Industry.

14. An acre of mulberry from the third year, when it is well established, usually yields 300 maunds of leaf with stalks, which is sold as a standing crop, cocoon-rearers buying it up and cutting it away from day to day. The purchase at the above prices is usually on credit, and often the buyers, when they lose

their crop of silkworms from diseases, are unable to pay the price of mulberry. The mulberry grower and the silk rearer are therefore both interested in the eradication of diseases. From 300 maunds of leaf 600 seers (1,200lbs.) of fresh cocoons are obtainable as the maximum result per acre. The value of this quantity of cocoons may be as much as Rs. 600. The profitableness of sericulture, when loss from disease, etc., may be kept down, can thus be easily imagined.

XII.—The Tree Mulberry.

15. When rearing is done with leaf from large mulberry trees, the seedling or cuttings planted should not be touched for the first five years as the leaves go to nourish the trees. They should be protected for the first three years at least with gabions, or with a rough envelope of coarse grasses and thorns, that injury from cattle may be avoided. If a couple of seers of whole bones are put underneath each tree once in twenty years, and the soil underneath the trees annually dug up in November, the trees will always remain in condition. Two pluckings are possible, annually the first in February or March, and the second in October or November, as some leaves must be left to nourish the trees. In the fifth year, when the first picking of leaves takes place, each tree will yield about 10 seers of leaf at each picking, or half a maund in the year. By the tenth year, the yield will gradually increase to a maund per tree. The maximum average yield per tree, may be put down at 2 maunds, which result will be attained after about 20 years. But the divergence in the yield of leaf is great according to the variety grown. The quantities mentioned will be readily yielded by *Morus lœvigata*, *Philippinensis* and the ordinary European *Morus alba*, but not by *M. indica* or *sinensis*. Every other year the branches of the trees should be pruned off, so that the new shoots coming on with a more vigorous growth of leaves, can be readily bent, and the leaves picked with the help of a crook without climbing.

XIII.—Rearing of Silkworms.

16. The rearing of mulberry silkworms and of Endi or Eri silkworms indoors on bamboo *dalas* proceeds on much the same method. Leaves (castor leaves in the case of the Eri silkworm) are put on the newly-hatched worms, cut up very fine, the worms with the leaves separated from the eggs after three or four hours, and put separately at the lowest shelf of a *machan* (called *ghara* in the silk-districts). The eggs hatching the next day are put higher up in the *machan*, and the third day's worms still higher up, after which usually no more notice is taken of the eggs, except in the case of the Barapalu eggs, in which the hatching is much more tardy. The worms up to the last moult are usually fed five times a day at regular intervals. At the last stage, the worms are fed three or four times a day. The worms moult or change their skin

four times during this interval, *i.e.*, from hatching to spinning of cocoons. Inside the cocoons the worm moults twice, once in changing into chrysalis and the second time in changing into a moth. Inside the cocoons and as moths they eat nothing. As moths they pair and lay eggs, and after a few days die off. Strong and healthy moths may live for a fortnight after laying eggs; but a moth dying within a day or two after laying eggs *may be* healthy and their eggs fit for rearing. As leaves are heaped up on *dalas* by repeated feeding, cleaning becomes necessary. Native rearers neglect cleaning at least in the early stages. But neglect in this matter and in the matter of keeping the worms thin, and the room well ventilated (though the worms themselves must always be kept away from a current of air), result in worms dying in large numbers specially at the last stage, though at the last stage one may be very careful. Keeping the worms thin and clean and the room well ventilated (though in even temperature) and free from dust, is necessary from the first. Cleaning and thinning of the worms are facilitated by thread-nets of meshes of about half an inch. A net is spread over the worms resting on dirty leaves, fresh leaves (cut up fine at the two early stages and whole leaves with stalks being put from the third stage) scattered over the net, and after half a minute the net may be removed to another *dala*. This has the effect of separating the worms evenly into two lots. Nets are to be used daily for cleaning whether the worms need thinning or not. A *dala* of newly-hatched worms has to be divided up into three *dalas* after the first moult, into nine *dalas* after the second moult, into 27 *dalas* after the third moult, into 81 *dalas* after the fourth moult, and at the last stage the worms occupy twice as much space (*i.e.*, 162 *dalas*) before they make cocoons. Daily the net from a *dala* with the worms and litter are to be lifted at the mid-day feed, removed on to a fresh *dala*, and the older *dala* removed outside and thoroughly cleaned. If, however, worms are found underneath the net, they must be assumed to be moulting. They should not then be disturbed, but kept on a lower shelf on a separate *machan* where no feeding should be done for about 24 hours. The worms on the net removed to a fresh *dala* are to be given a feed and then left without food for about 24 hours. Great care is necessary at moulting periods. The point to remember is, it does more harm giving food to moulting worms than fasting them for a few hours until the worms are well out of moult which is known by their agility and hungry look. If on blowing over the worms they move very fast, one knows they are properly out of moult. If, on the contrary, the movement they exhibit is of a dull and listless kind, they are not quite out of their sickness, and they should be still left without food. An extra feed at the time when the worms are going off to moult does not do them much harm; but feeding too early does harm. Experience is needed in this matter.

17. Worms in the same room should be all of the same age, as much as possible. That is why tardy worms are kept high upon *machans*, and early ones lower down, both at hatching and at moulting times. If worms of different ages are kept in the same room, the late worms suffer more from disease. Worms when they are ready for spinning become translucent and they constantly spit out silk from their mouth. At this time, in the case of Indian silkworms, they are quickly picked and transferred to a spinning screen (or *Chandraki*), where they get convenient bearings for making cocoons. In the case of the *B. mori*, dry twigs are arched over the worms and ripe worms make their cocoons in these arches. In the hot weather, from hatching to spinning, only about 20 days are spent in the plains of Bengal, and in the coldest weather about 40 days. But cocoon-rearing is best done when the temperature is about 75° and fairly uniform. That is why the November bund or crop is the best crop, and the March bund the next best. If large mulberry leaves are used, only these two crops would be taken. But when the shrub mulberry is used, rearing must be done at other seasons also, when, on account of too great heat, or cold, or damp, rearings are more or less unsuccessful. Two good crops of cocoons are better than eight indifferent ones (even the two good crops being subject to infection when four or eight crops are attempted). Indeed, on account of the parasitic fly-pest it is not feasible to take all the eight crops in the year, and this is why rearers take a crop and omit the next and then go for seed to some distant place, and the actual number of crops taken in a village is three or four. When the cocoons are formed, they are gathered from *chand-rakis* on the third day and sold off at once, or killed in a *kulsi* as described in connection with tusser cocoons, or in a basket put over a boiling pan of water, the basket being covered over with a blanket. When there is hot sun, the rays of the sun are sufficient to kill the cocoons in two or three days.

XIV.—Reeling of Mulberry Cocoons.

18. Except in the rainy season, cocoons, however killed, must be steamed in an oven immediately before reeling. Oven-d cocoons should be reeled off within 3 or 4 days. Oven-d cocoons should not be spread out in the sun to get dry, but should be kept spread out indoors in *machans* and reeled off as fast as possible. For small quantities of cocoons the ovening can be done in a basket over a pan of fire as in the case of killing, a blank space being left in the middle of the basket, so that cocoons about 6" thick may rest on all sides and the top, and the steam work its way from the bottom through the cocoons and out of the blanket. When for 10 minutes the steam is coming out of the blanket, the cocoons may be considered to be properly ovened. When dealing with large quantities of cocoons, special erections are necessary

for ovening. In the rainy season the air is naturally steamy and it exercises the same beneficial effect on the cocoons as an artificially produced atmosphere of steam. But cocoons *spun* in rainy weather do not unravel properly in basins and they are a source of great loss to European factories where even silk is required to be made. Ovened cocoons are reeled off in a basin of water which is kept boiled with fire or steam, and passed in two lots to a reel, which as it is wound round and round, the cocoons get worked off. As each cocoon gets worked off, its place is supplied by another, the end of which is kept ready for the purpose by the reeler, and an expert reeler can reel off as many as four *kahans* of cocoons per day when he has to make the best kind of silk, and ten *kahans* a day when he has to make native *Khangru* silk.

XV.—The Silk-Fibre.

19. There is no fibre so long, so strong, so fine, so soft, and so smooth, as the silk-fibre. When we talk about the staple of cotton-fibre being long, we only mean that it is $1\frac{1}{2}$ or $1\frac{3}{4}$ inches in length; when we talk of jute-fibre being long, we only mean that it is 12 or 13 ft. long, but the tusser cocoon has an uninterrupted fibre 800 yards long and some varieties of mulberry cocoons, one uninterrupted fibre of 900 yards, and yet the fibre is so fine that in the case of the tusser this single fibre from a cocoon is 700 milligrammes and in the case of the mulberry silk it is 250 milligrammes in weight. So fine is the thread, that although there is no difficulty, on account of its strength, to draw the thread out of single cocoons, in practice never fewer than three cocoons in the case of the tusser and never fewer than four or five in the case of the mulberry cocoons, are used simultaneously for drawing out the thread from. It is for the finest silk muslins or silk gauze that thread is made by drawing out the fibre of four or five mulberry cocoons together. So strong is the fibre of mulberry cocoons that it is quite easy to draw out the fibre on to a reel without a single break, though this fibre is so fine that for practical purposes it is never used for making fabrics in these days, though perhaps in olden times the "Koan vests" of the Roman empire were woven out of such single silk-fibre. And yet each single fibre of silk is made of two ultimate fibres agglutinated together with a natural gum which gives the fibre its brilliancy. These two ultimate fibres or *baves* come out of the spinarette at the mouth of the silkworm, and ultimately derived from two glands situated on two sides of the interior of the worm. These two glands are sometimes taken out of the body of the silkworm, put in vinegar and afterwards drawn out in the form of silk-worm gut which is used for tying fishing-hooks to the line. For its weight and pliancy there is no such strong substance as the silkworm gut.

20. But though the fibre is the strongest, finest and softest fibre of all, one silk-fibre differs from another so much that one is valued at Rs. 10 a seer, while another at Rs. 30 a seer, and a country which habitually deals with a Rs. 10-per-seer fibre can ill-compete with a country which habitually produces a Rs. 30-per-seer fibre. The native-made silk of India called *Khangru* or *Ghangru* silk sometimes sell at only Rs. 10 per seer, and Rs. 12 per seer may be taken as the average price of *Khangru* silk. The European filature reeled silk is much better. It sometimes sells for only Rs. 16 or Rs. 17 per seer, but its average price is about Rs. 20. Italian, French, and Japanese silks are still better and they sell for about Rs. 30 a seer.

21. Why is there this difference in price? Let us first see the cause of difference between European filature reeled silk and *Khangru* silk. As much as one seer a day may be reeled by a couple of men on the *Khangru* system, though the average quantity is 9 chhitaks. As much as $4\frac{1}{2}$ chhitaks per day is sometimes turned out by a pair of operatives in European filatures, but the average may be taken at $3\frac{1}{2}$ chhitaks. This difference comes of the Europeans looking to quality and the Indians chiefly to quantity. There are three causes which combine to make the European filature reeled silk being so much superior to the country *Khangru* silk :—(1) The European factories of Bengal regulate the number of cocoons reeled more exactly and usually use a smaller number, five or six cocoons, instead of 20 cocoons. (2) The European factories insist on a knot being put whenever there is a break. (3) The European factories cross two adjacent lots of fibre twice on themselves to effect an agglutination of fibres, while the country reelers not giving any croisure and putting no knots, can reel away very fast and get a larger absolute and relative produce.

22. Is it worth while for our country reelers to follow the European system, and produce a smaller quantity of superior fibre? Not at present, when the demand for silk at Rs. 12 a seer in India is very large and very keen. There is practically no demand for the Rs. 20 silk in the Indian market. Ask the large silk-mill-owners of Bombay what silk they want. They will tell you, silk of the value of Rs. 5 or Rs. 6 per pound; and as for hand-loom use, they prefer, as a rule, the cheaper silk. A few skeins of what is called by our country weavers "Latin silk," that is, European filature reeled silk, are always used by exceptionally good weavers to meet some special demand, but it is the *Khangru* silk that they are accustomed to handle. The demand from Benares, Lahore, Amritsar, Karachi, Nagpur and other centres of silk-weaving is for the Bengal *Khangru* silk, and this demand is very great. Nearly a crore of Rupees worth of silk is exported to other Provinces of India from Bengal against 50 lakhs of Rupees worth of superior filature reeled silk exported to Europe and America.

The demand for the *Khangru* silk shows an upward tendency and the demand for the superior European silk shows a downward tendency. There is therefore no hesitation in what I have recommended. Go in for quantity for the present, and turn out *Khangru* silk for the country.

23. The next question we should turn our attention to, is, why is not the European filature reeled silk of Bengal as good as Italian, French or Japanese silk? In Europe there is demand mainly for high-class silks, as in India there is demand chiefly for low grade and cheap silks; and in India also, as time goes on, the demand for high class silks will increase. If the millers and weavers of India can buy high class silks for Rs. 8 per lb., they will not buy low grade silks for Rs. 5 or Rs. 6 per lb. High class silks are more easily unravelled, and there is less waste in unravelling it, and though labour in India is cheap, the manufacturer finds it pays him to buy high class silk for Rs. 8 a lb. If in Europe also European filature reeled silk can be sold for Rs. 8 a lb., it will sell better, but European manufacturers do not care about using silk which gives so much trouble in unravelling. It is therefore worth while to be prepared for the European market and for the future demand of the Indian market. At present the European silk factors should rewind their raw silk before export.

24. What is the cause of the inferiority of the European filature reeled silk of Bengal as compared to the European and Japanese silks? This is a question which we have not answered yet. From recent experiments I have come to the conclusion that the inferiority comes neither from the inferiority of the workmen nor of the machine, but it is to be attributed mainly to the inferiority of the Bengal cocoon. The Bengal cocoons are the worst in the world, and with no machine is it possible to produce out of these cocoons silk of such quality as can be produced out of the *Bombyx mori* cocoons. The reason is not far to seek. The length of the fibre on a Bengal cocoon is about 200 to 250 yards, while that on a *Bombyx mori* cocoon about 800 yards. The silk made out of *Bombyx mori* cocoons (which are the staple of Europe and Japan) must therefore contain about four times as fewer joinings as the silk made out of *Bombyx Cressi* or *B. fortunatus* cocoons of Bengal. The average length of fibre on a Mysore cocoon is about 300 yards, and the *Bombyx meridionalis* cocoons of Madras therefore produce a little better silk than the silk produced by the same machine in Bengal filatures out of Bengal cocoons.

XVI. Introduction of the *Bombyx Mori* Cocoons.

25. How to introduce the *Bombyx mori* cocoons into India is therefore the problem before us. I have worked the *Bombyx mori* cocoons successfully for a number of years in Bengal, and it has been worked in Kashmir and Assam with success also. The difficulty with regard to the rearing of this class of cocoons is in the matter of conservation of seed or eggs. The eggs

require a period of intense dry cold, and they must be protected from hot winds at other times. In every part of India the *B. mori* worms can be reared (and in many parts they have been reared), successfully at some time or other from February to June. But the conservation of the eggs from April to next January is possible only in a few places like Kashmir, Dalhousie, &c., where in winter the cold is severe but dry. There is another difficulty with regard to the *B. mori*. The epidemic called Pebrine must be kept suppressed by annual examination of the seed with a microscope. If railway communication is established between Kashmir and the rest of India, and if Kashmir establishes the "system of grainage" as devised by M. Pasteur, she can supply the rest of India with seed. This will give one good crop in the year which will make a Rs. 30-per-seer silk. But a separate organization of having a grainage and hibernating station at Dalhousie may be also tried and this was the subject of my paper in last year's Conference at Benares.

XVII.—Diseases of Silkworms.

26. The greatest obstacle to sericulture is the prevalence of certain diseases among silkworms. In Bengal, Pebrine, Muscardine, Grasserie, and the fly-pest (*Tricolyga bombycis*) do the greatest amount of damage; while other diseases, such as Flacherie, Court, Gatine and the *Dermestes vulpinus* also do some amount of harm. In Mysore Flacherie does the most harm, while other diseases are scarcely known.

27. Pebrine (Bengali *kata*) is caused by a microscopic organism which, when magnified 600 diameters, looks like grains of mung seed. It is a slow-acting disease, taking 30 days for complete development, so that when the seed is badly pebrinized, the worms die off at the last stage, all of a sudden. If rearing is completed in less than 30 days, pebrinized worms spin cocoons, though these are poor. When the seed is not very badly pebrinized, some worms, *i.e.*, those produced from pebrinized eggs, die off on the 30th day, while others which catch the infection from the pebrinized worms, die later on, or make cocoons and come out as moths, which show pebrine corpuscles, and then die. Some worms from eggs free from pebrine happen to escape infection. These spin cocoons, come out as moths, and show no pebrine corpuscles. The eggs from these moths are safe to rear from. Each moth is made to lay eggs under a separate cover, on sheets of paper, and after at least five days, each is examined under a microscope. The eggs of those moths, the blood of which show no pebrine corpuscles, are retained, the rest being burnt. The eggs selected out are then superficially purified from diseases, by a dip in a sulphate of copper bath ($\frac{1}{2}\%$ solution), hung up in a cool but airy place to get dry, and then taken inside a rearing room, which with its rearing appliances has been already disinfected with sulphate of copper wash and sulphur

fumes. The rearing from eggs thus selected and in room thus disinfected cannot fail from pebrine. Where rearing takes place once a year, disinfection of appliances is not necessary for protecting the worms against pebrine alone, provided the seed itself is selected. The germ of pebrine loses its vitality in seven months, and local infection thus dies out before the next annual crop is taken. Natural freedom from pebrine is more desirable than freedom secured by microscopic selection. Thus, the *Bombyx meridionalis* silkworm of Mysore is naturally free from pebrine, and microscopic selection is not necessary in rearing, and this variety is giving good result in Bengal. A lot of seed selected out free from pebrine always tends again to get more and more pebrinized from 1 to 5 %, from 5 to 20 %, and from 20 to 50 %, and so on, until in a few generations every moth again is found to be pebrinized. In this case, therefore, microscopic selection is needed at every generation to secure exemption from pebrine. Five per cent. of pebrine in the seed does not affect the result, but 20, 30 or 50 % of pebrine left without selection, spoils the result more or less, though even with 80 or 90 % of pebrine in the seed, a sort of a crop is obtained in the hot weather, the pebrine not getting time to develop so fully as to kill the worms. It only weakens the worms, so that they either make poor cocoons, or succumb to other diseases. A pebrinized lot of worms thus falls an easier victim to Flacherie, Muscardine, Grasserie and Court, than a lot of worms which is free from pebrine. It is essential to have a number of nurseries in each silk-district in Bengal, where the system of microscopic selection will be rigorously followed and the cocoons obtained from selected eggs sold for seed purpose, or where a stock naturally free from pebrine is reared. The few nurseries that have been established by cocoon-rearers in Bengal are doing very good work.

28. Muscardine is another epidemic of the silkworm which is due to a higher fungus, quite visible to the naked eye in its fully developed form when it partakes of the nature of a white mould on the bodies of dead worms. The worms which have this mould get like sticks of lime, hence the Bengali name *Chunakati*. This epidemic is also readily controlled by disinfection of eggs and all the appliances used, and rearing the worms in clean manner. If through neglect of disinfection of the rearing house and the appliances, of the eggs at the commencement, or by the neglect of delitage, Muscardine does break out, it can be stopped, by cleaning the worms with nets, keeping the worms fasting for a few hours and by burning sulphur afterwards in the room thoroughly shutting it up. The cleaning will have to be done daily after this and a little sulphur burnt after the room has been smeared with sulphate of copper solution. Many a rearing was saved from Muscardine in connection with the experiments with which I was entrusted for ten years.

29. Flacherie is an epidemic caused by the fermentation

of mulberry leaf inside the stomach of silkworms. Such fermentation may be caused by various microbes, but the microbe which is mainly instrumental in setting up the gastric fermentation is the *Bacillus Megaterium bombycis*. The disease is known in Bengal as Kalsira because the dorsal vessel of the worm gets black. Putrefaction, however, sets in very rapidly and the whole worm gets black and putrid soon after death. This disease is so common in Mysore, because there the custom prevails of feeding the worms 7 to 9 times a day instead of 3 or 4 times. The organism may be either in the spoilt, dusty or heated mulberry leaf, or in the intestine of the silkworm. Weak worms have greater proclivity to take the epidemic, so that a feed of the same lot of mulberry may give Flacherie to one rearing and none to another. The state of the rearing room also has considerable effect on the disease. A stuffy, close room would give Flacherie to silkworms, while a well-ventilated room gives comparative immunity. Dust, specially dust raised at delitage, aggravates the epidemic. The remedies are : (1) disinfection of eggs, rearing house and appliances with sulphate of copper solution. (2) Feeding of the worms not more than five times during the early stages and not more than four times during the last stage. (3) Using of fresh unfermented leaf, without dust, without dew or other moisture, and of leaf that has not been submerged under water or otherwise got under the control of microbes in the field while growing. (4) Keeping the rearing room well ventilated. (5) Cleaning the worms daily and yet raising no dust, by taking the trays out for dusting, and keeping the floor instead of sweeping it.

30. *Gatine* (Bengali *Salpha*) is a form of indigestion which is caused by excess of heat or excess of cold, which takes away the appetite of the worms, and though they are given leaf, they do not eat, or eat only occasionally. The worms look elongated and white. In pebrine also the worms look pale, but they look short and not elongated. The ultimate form which *Gatine* takes is the same as in the case of *Flacherie*. They become black and putrid. *Gatine*, however, is not so fatal, and it does not spread so rapidly as *Flacherie*; and if the worms are removed from the cold place, or if by *punkha* or other means heat can be lessened, the worms recommence eating and the epidemic is arrested. It is best to avoid rearing in April or May, and in December and January, when the temperature cannot be controlled, and rearing in open places, where the temperature varies very much.

31. *Grasserie* (Bengali *Rasá*) is a disease which is not associated with any microbe. It is caused by a sudden change in the character of food from a less sappy to a more sappy condition. Worms ought to be given stronger and stronger leaf as they get older and older; but if owing to a heavy shower of rain following protracted drought,

or change of field, the consistency of leaf changes into a more sappy condition, Grasserie at once breaks out. The remedy is to use leaf gathered from trees and eschew the use of shrub leaf as much as possible. The recommendation to grow large mulberry trees is very important for this among other reasons. In Europe and in Kashmir where leaf from trees is used, Grasserie is never known in the epidemic form, while in Bengal more loss takes place from Grasserie than from Flacherie. In fact, Grasserie is looked upon by the French peasant as an auspicious sign, as an indication of a full harvest.

32. Court, called in Bengali *Láli*, *Ráangi* or *Kurkutte*, is more an abnormality than a disease. A worm affected with Court, turns into chrysalis without making a cocoon or making a very flimsy one. The chrysalis turns into a moth which may lay eggs, and examined under the microscope, it may not show any disease. But the reproduction from such seed gives Court in a more exaggerated form in the next generation, and it is, therefore, an abnormality that must be avoided. If worms are fed on *naicha* leaf, that is, on leaf from a new plantation, or from shady places, or given an insufficient supply of leaf at the last stage, this abnormality is noticed, and it is further hereditary.

33. Double-cocoon (Beng. *Genthe-koa*) or two worms jointly forming one cocoon, is an abnormality which is not very common in Bengal, but it is very common in Japan and China, and fairly common in Europe. The tendency is hereditary, and as double cocoons cannot be reeled, they are often fraudulently used for obtaining seed for sale. The use of such seed has resulted in breeds that show the abnormal tendency to an exaggerated degree. In Bengal, cocoons being always bought for seed, there is no fear of this abnormality assuming alarming proportions.

34. The fly-pest does very great harm to the silk crop in Bengal. The *Tricolyya bombycis* which is a tachinid fly, lays its eggs only on silkworms. The eggs hatch into maggots which penetrate into the body of silkworms, and in time kill the silkworms either before or after they have made cocoons. If a silkworm dies after making its cocoon, instead of a moth, a number of maggots of the fly come out of the cocoon. These infest the rearing room, and it becomes impossible to rear silkworms at the next generation. That is why Bengal rearers give up rearing every other generation, and every time go to some distant place for seed. With the seed-cocoons, however, a few maggots of the parasite always come into the village, and some damage is always done. The remedies are: (1) For all the villagers to seed their cocoons in the distant village where they go to buy them, and bring home only eggs. (2) Never to allow any villager to take two crops in succession, but to make all to stick to the three or four regular crops. (3) If these precautions are impossible to adopt and if the fly must be

dealt with, the rearing room must be built in a special manner, the windows away from the entrance being fitted up with wire-gauze, and outside the windows vessels of water with a few drops of kerosine oil to each being kept at a height of 5 or 6 feet from the ground, while before the entrance, which should be kept shut in daytime as much as possible, cow-dung fire should be always kept, which should evolve smoke. This has the result of the parasitic fly avoiding the entrance, congregating outside the windows and rushing every now and again into the troughs of water and drowning themselves, believing them to be entrances to the rearing room.

35. The *Dermestes vulpinus* is a beetle which eats up silkworms, chrysalids and moths, both in the larval and imago stages. These also come with the seed-cocoons. They also harbour in cocoon godowns. If seeding is done outside rearing rooms, and if the rearing rooms and appliances are kept scrupulously clean, there is no fear of loss in an epidemic form from this pest. Once only has the author seen the *Dermestes* ruining the rearings in a few villages near Berhampore.

XVIII.—Rearing and Spinning Eri Silkworm.

36. The Eri silkworm is reared in the same way as other Polyvoltine silkworms of Bengal. The cocoons, however, cannot be reeled, and the method of dealing with the cocoons should therefore be described. The moths should be allowed to escape from the cocoons, and as in reeling mulberry or tusser cocoons, the insects should not be allowed to remain in the cocoons. The rearing and spinning, therefore, of the Eri silkworm involves no killing of animals, and for this reason alone Eri silk-rearing is popular among amateurs in this country. The fibre also is strong, and *Endi* cloth is on this account very popular, and the rearing of the Eri silkworm, though less profitable than that of mulberry or tusser silkworm, is not altogether without advantages. The cocoons, after the moths have escaped from them, are boiled with ashes or better still with lye, as in the case of tusser cocoons, and when cool, well kneaded in the warm lye, and then washed by constant kneading in clean water, wrung out and dried in the sun and spun with a spindle or a wheel at leisure. Eri rearing and spinning must remain for years to come a cottage industry. But Eri cocoons are carded and combed and spun like cotton or wool in European mills, and when the industry is established on a large scale anywhere, a *carderie* on European principles may be established.

COTTON CULTIVATION IN BENGAL.

By D. N. MOOKERJI, Esq., M.R.A.C.,

Assistant Director of Agriculture, Bengal.

The cotton area in Bengal is steadily contracting. It used to be fairly common within the memory of men still living. But it has completely vanished from many districts within a few decades. But taking India as a whole the area under the crop is expanding. The following table may be interesting :—

Years.	Acreage under cotton	
	in	
	Eastern Bengal.	Bengal and in all India.
1892-93	229,900	13,422,107
1900-01	127,700	14,231,150
1904-05	89,800	19,014,432

It is doubtful if cotton was ever a favourite crop with the Bengal raiyat. Dacca was famous for her wonderful muslin and the district produced the finest cotton in the world. But the cultivation of this cotton does not appear to have been a matter of much profit to the raiyat. John Bebb, Commercial Resident at Dacca under the East India Co., writing in 1790 gave the cost of cultivating an acre of "Photee" cotton as Rs. 28-8. A fair average crop was 9 mds. of seed cotton worth only Rs. 36. This therefore left the raiyat no more than Rs. 7-8 per acre as profit. Indeed according to Mr. Bebb the actual cultivators of this cotton "were ground down until a bare subsistence was left them."

Though cotton used to be fairly common only a short time ago it is doubtful if Bengal ever grew sufficient cotton for her own requirements. There is evidence that about the middle of the 18th century when her manufactures were still in full activity if not in the height of their prosperity Bengal grew only one-eighth of the cotton she required, the quantity imported from other Provinces of India amounting to seven-eighths of the total consumption (*Vide* Medicott's Cotton Hand-Book for Bengal, P. 44). Cotton cultivation was carried on in Bengal for local purposes only. It seldom appeared for sale even in the village bazaars. It was spun by the village women and served to clothe the raiyats and their families after being worked up by the nearest weaver.

The reason why Bengal does not grow much cotton lies on the surface. It is because the soil and climate are suitable for more remunerative crops. The famous "Photee" of Dacca, as we have seen, yielded on an average 9 mds. of seed cotton per acre. Taking one fourth of this as lint the fibre amounted to 180 lbs. This is a very high outturn, for taking India as a whole the

average yield of cotton per acre does not much exceed a maund only. Photee though exceedingly fine was probably a short stapled variety and we can only speculate as to what its price would have been if it still continued in existence. But taking such cottons as we now find in general cultivation in Behar or Choto-Nagpur, and taking the out-turn even as 200 lbs. per acre if cultivated in the fertile alluvial soil of Bengal, the gross value per acre would not be much above Rs. 45. Now compare this with Jute. An acre would yield on an average 15 mds. of fibre which even at Rs. 8 per md., would mean Rs. 120. In the present year of high prices of food grains the raiyat has reason to be particularly grateful to Jute. For my part I cannot see any sense in advising the raiyat to take to cotton in place of Jute.

There are millions of women, Hindu and Mahomedan who are debarred by social etiquette and the exigencies of domestic life from working outside their own homes. You want to find employment for their idle hours. They can spin as their grand-mothers used to do not so very long ago when the "Churka" was a great feature of every village home. You are ready again to welcome with joy the rough "Saries" and "Dhuties" of home-spun yarn. There is no competition of wages here. There are hundreds of thousands of poor widows who would only be too glad to add something, however small, to their present impossible incomes. Against this idea so enthusiastically put forth by many of our countrymen to-day I have not a word to say. I only contend that it is not necessary for our raiyats to grow cotton in place of a more remunerative crop. We can buy the fibre that we want our wives and daughters to spin. There is no lack of cotton in India. Vast quantities are exported to foreign countries to distant Japan and Germany for instance. We can import it from the other Provinces as we used to do before.

I could understand the present excitement over cotton cultivation if the idea was to grow a better crop than is found in the country generally with the object of regaining our lost markets. Consider for a moment our position in this respect. In the later eighties Great Britain took between 30 to 40 per cent. of the cotton exported from India. In 1899-1900 the amount had fallen as low as three per cent. And though there has been a slight improvement since (in 1903-04 the amount was 6 per cent) yet practically speaking Great Britain has closed her door against Indian cotton.

Of the world's commercial demand for the raw material the United States alone supply as much as 85 per cent. She produces on an average 10 million bales (bale is equal to 500 lbs) per year and can increase her supply practically indefinitely if the demand were to grow and the present prices maintained.

Compare with this the out-turn of cotton in India. In 1904-05 the mill consumption and exports amounted to 3,390,000 bales. Adding 380 thousand bales, the official estimate of consumption outside the mills, the total comes to 3,770,000 bales. Our bales are

400 lbs each. Reduced in terms of 500 lbs bales for comparison with the United States figures our annual output amounts to barely 3 million bales.

India has at present about 19 million acres under cotton against 28 million acres in the United States. Yet while the latter produce 10 millions bales of cotton per year, we produce only 3 million bales. Or in other words, while the United States acreage exceeds ours by barely 50 per cent. her annual out-turn exceeds ours by something like 250 per cent. The average yield of an acre in India is about a maund of 80 lbs; that in the United States is 200 lbs. What is more, American cotton is of superior quality and fetches a much higher price in the market.

As for Egyptian cotton there is no comparison between it and either American or Indian cotton. The out-turn is about 500 lbs. per acre. and the price per pound is quite double that of American cotton. Egyptian cotton rather competes with the Sea Island cotton, the finest cotton in the world, of which Georgia, Florida and South Carolina produce only a few thousand bales every year.

Now can we grow American cotton in Bengal? Can we grow Egyptian or Sea Island cotton? Can we improve the quality and yield of our indigenous cotton by breeding and selection? Can we by suitable manuring so increase the out-turn and profits of cotton cultivation as to make it worth the attention of our raiyats if not in the Eastern districts at any rate in Choto-Nagpur and the adjoining districts?

The attempt to improve Indian cotton is not new. It has occupied the attention of the Government of India for nearly three quarters of a century.

It began in 1829 by the Court of Directors drawing the attention of the Government to the importance of the indigenous short-stapled varieties and recommending for trial throughout India the cultivation of the finest of Dacca cottons.

In consequence of this order Dacca cotton was experimentally planted in many places throughout Bengal, without success however.

Government spared neither money nor trouble. Large farms, each consisting of several hundred acres were established under European supervision, and later on practical and experienced cotton cultivators were brought over from the United States. Sea Island, Egyptian, Upland Georgian, New Orleans, Bourbon, Peruvian and other varieties were tried but all to very little purpose.

Neither time nor space would admit of my referring even cursorily to the various attempts. I would only refer the student who is interested in the subject to Mr. Medicott's "Cotton Handbook for Bengal" which was published in accordance with the resolution of His Excellency the Governor-General in Council, dated 22nd July 1861.

The book is a digest of all information available from official records and other sources on the subject of the production of cotton in the Bengal Provinces. By the term Bengal Provinces however, was meant not only what now constitute Bengal Proper and Eastern Bengal and Assam, but also the United Provinces and a part of the Punjab on the one hand, and Arracan, Pegu, Tenasserim, Singapur and the Andaman Islands on the other.

I shall content myself only with a few words on the work of one of the four American cotton planters who landed in India in January 1841. I mean Mr. Price. He was stationed like his fellow planters in the North-West; but later on "at his own" request he was transferred to Dacca which had been from time immemorial the best cotton field of Bengal. Mr. Price was according to the Governor-General a person "thoroughly acquainted with the plantations in America, and conversant with all circumstances connected with the production of cotton of the best description."

Mr. Price was like his brother planters, given a free hand and readily supplied with all that he suggested as necessary for carrying on his experiments.

The course of these experiments which lasted from 1844 to 1849 was attended by a series of disasters. The experiments were a failure in every sense. They not only failed in proving to the native cultivators that fine kinds of exotic cotton could be profitably grown in the district, but they failed in turning out any cotton whatever, at any cost of production, of which the quality was approved by the English brokers, and worse still, they failed to establish any fact as to what varieties seed were suited, to any of the different localities tried. At the close of the experiment, Mr. Commissioner Dunbar, who was throughout its career greatly interested in its success, informs Government that its history does not establish any one fact of general interest, certainly not that the Dacca district is incapable of growing exotic cotton. According to Dr. Royle the failure was due to the American planters sticking to their preconceived notions and failing to adapt their methods to the soils and especially the climates of India.

At his own request Mr. Price was allowed to transfer the scene of his activity from Eastern Bengal to Assam where his failure was only worse; but we shall not follow him there.

In America cotton is grown in the south. It is sown in April and the harvest is finished by November. The average rainfall during the growing period of the plant (from April to September) is about 25 inches. In the early months (April and May) the precipitation is on an average about 3.5 inches a month. The rainfall as everywhere else varies of course from year to year, but in the Southern States of America it varies within very narrow limits, and the cotton crop never suffers to the extent of being "half a crop." The crop suffers if the rainfall in April and May exceeds the normal even by an inch per month.

Now compare our conditions with those of America. In Choto-Nagpur, Behar and Orissa there is practically no rain before June to admit of ploughing or sowing. But then, when the monsoon begins the downpour is tremendous often amounting to 10 or 15 inches of rain in a month.

However, where the soil is undulating the rain does not stand on the ground and this heavy precipitation does less damage to the cotton crop than in the level country. In East Bengal, on the other hand, we have moderate rain in April and even in March. This is very favourable, but unfortunately when the monsoon does break the rainfall is even worse than in Behar. In many of the eastern Districts the rainfall from April to September amounts to 70 or 80 inches and even more. Add to this the general low level of the eastern districts, a condition which is also unsuitable to cotton. American cotton, as we have seen, is only a moderately moisture-loving plant.

If our conditions are unlike those of the Cotton States of America, they are still more different from the conditions of Egypt. In that country there is practically no rain, all cultivation depending upon either irrigation or inundation. The following table gives the average annual rainfall at a few of the important stations :—

			Annual rainfall.
Alexandria	...	...	... 8.1 inches.
Port-said	...	...	... 3.4 do.
Ismalia	...	...	... 2.1 do.
Suez	...	...	... 1.1 do.

The rainfall at Cairo is very uncertain. In many years the fall does not even amount to an inch.

Cotton is grown only in the Delta of the Nile. This industry to which Egypt owes her present financial prosperity is hardly three quarters of a century old. The country used to be inundated by the Nile making it impossible for any crops to be grown during the season of flood. But Mahomet Ali Pasha put up vast embankments to keep the flood water out. He also dug canals to provide for irrigation. Formerly cotton was cultivated to a very small extent as a perennial only in the enclosures of Upper Egypt. Now cotton is grown everywhere in the Delta as an annual crop. As in America the sowing takes place in April and the harvesting is finished by November. The crop altogether receives about 14 irrigations of which 9 are given by lifting water from the bed of the river. Almost as in Eastern Bengal the river begins to rise from early in June and by August rises sufficiently high to admit the water through openings in the dykes.

But irrigation though it certainly means expense, also means regulating the moisture conditions perfectly. There is on the other hand no controlling rainfall. In America there is no irrigation for cotton, but there the rainfall is moderate and

fairly regular. With us the rainfall is immoderately heavy. The out-turn of Egyptian cotton is on an average 500 lbs. per acre; of American cotton 200 lbs.; while of Indian cotton it is no more than 80 lbs. American cotton is superior to ours in quality while Egyptian cotton is so superior to both that there is practically no comparison between them. Egyptian cotton competes with Sea Island cotton of which America grows only a few thousand bales and the price of which varies between two to three times that of ordinary Upland or New Orleans cotton.

But Sea Island cotton does not grow very well in Egypt nor has America succeeded with Egyptian cotton. Because Dacca used once to grow very good cotton, therefore, it does not necessarily follow that she will be successful with American, Egyptian or Sea Island cotton.

Interspersed through the records of failure are instances of success, but very curiously these apparent victories were not followed up. Considering, however, the general fate of the efforts one may seem too bold to recommend their renewal; but the science of agriculture has advanced a very great deal since the days the American planters worked and failed. When their rule of thumb did not avail them they were left completely helpless. But it ought not to be impossible now by selection and breeding to produce a plant to suit our conditions. We may take courage by the example of America herself in overcoming the difficulty with the acclimatization of Sea Island cotton, the finest cotton in the world. The story is interesting. This cotton, (*Gossypium "barbadense"*) is a native of the West Indies. It is a perennial or tree variety yielding in its native home its harvest in the winter. When an attempt was made to cultivate it in the mainland where the winter is much severer than in the Island, the plants were killed by frost before bearing any flowers or pods. The stocks were, however, allowed to stand over and next spring some of them threw up new shoots. These bore some flowers and ripened some pods by next autumn before being again taken over by frost. The few seeds thus secured formed the starting point in the work of acclimatization. These seeds were sown and from the plants that came up those giving the earliest flowers and pods were selected as mother plants. This simple process was repeated for a few years till a race was obtained yielding its harvest by October and November like the general Upland cotton.

Not only has Sea Island cotton been acclimatized in the United States, but what is more, it has been so improved by careful selection as to be double the value of the original variety.

I have not space to go into the attempts that are being made in various countries but specially America, to improve their native varieties of cotton by crossing with foreign varieties such as Egyptian and Peruvian. Not only are breeding and

selection better understood now than before but also in manuring we have advanced a long way from the time when the chemical experts of the Government of India recommended a peaty soil for the finest sorts of cotton on the express ground that the plant took the carbon required for its lint from the ground. A tyro now knows that neither cotton nor any plant in the world ever takes any carbon from the ground; they take it of course from the carbonic acid of the atmosphere. That cotton required phosphoric acid for its best development had not yet been discovered, nor had the name of super phosphate been heard of. But I imply no blame to those experts personally who lived before the days of Liebig, Laws, and Gilbert. They merely laboured under the limitations of the infancy of Science. But the fact remains that the ideas of 60 years ago have been revolutionized.

We may therefore refuse to accept as final the failure of the forties. In our light, loamy soils, specially in the high lands, we possess a better equipment for the finer grades of cotton than the stiff clay commonly known as the black cotton soil of Central and Western India. Again in the fine weather we enjoy from October when the bells open and the cotton is picked we enjoy the "sine qua non" of cotton cultivation in the matter of weather. The unfavourable features of the climate previously mentioned, though serious, do not seem to be insurmountable.

INDIAN SUGAR DEVELOPMENT,

By A. E. JORDAN, ESQ., A. M. I. M. E., F. S. A.

MESSRS. MARTIN AND CO., CALCUTTA.

Although the development of the Indian Sugar Industry is a matter of the utmost importance to the country, I have no desire to burden you with a very lengthy paper on the subject. As a matter of fact, I have written so much on the Sugar Industry, during the last two years especially without any appreciable results beyond arousing some interest where before there was none, that I fear, a very lengthy paper would at this time be a burden to myself even, keenly interested as I am in the subject, because it could only be a repetition of what I have written so often.

I will therefore be content, as you no doubt will be also, if I simply state a few facts regarding the backward state of the Sugar Industry in this country and make one or two suggestions for improving it. The sugar manufactured in this country is derived from two sources, *viz*, The sugarcane and the Palm Tree. The area under sugarcane Cultivation is anything from 3 to 5 million acres, and it is most difficult to form an estimate of the outturn of raw sugar, but if we take the cultivation at 3 million acres only, and reckon on an average of 20 tons of cane per acre the output of raw sugar should be something like 6 million tons.

The method of manufacturing this raw sugar as carried out by the cultivators must be known. I am sure, to everyone, and is simply this.

The canes are crushed by country cattle mills, which extract only about 50 per cent. of the juice which is in the cane, and this Juice is boiled into "Gur" or "Jaggery" which frequently yields less than 50 per cent. sugar.

You can see some of this raw sugar in the Agricultural Section of the Exhibition. It looks innocent enough in all conscience but it is the manufacture of this very article which is at the bottom of the deplorable backward state of the sugar industry of this country for the following reasons:—

In the first place, through inefficient crushing of the canes, the cultivator does not obtain the profit from his crop which he ought to obtain, and the quality of the raw sugar which turns out by his crude methods of boiling, is in most cases, so poor that is to say, it yields such a low percentage of sugar when refined, that it can only fetch a low price, so the cultivator has absolutely no encouragement to extend his sugar-cane cultivation.

In order to make white sugar, this raw sugar must be made

into a liquor for filtering, and as the liquor must be decolorised being of a dirty brown colour caused by the method of boiling it, it is absolutely necessary that it be passed through some medium which will decolorise it to make white sugar, and the only medium that will effect this is Animal Char. Burnt bones possess the necessary chemical or mechanical, whichever you like to call it, properties of effecting this decolorisation of the liquid as nothing else does, but I may here state for the benefit of those who imagine that bones and blood are used in the manufacture of sugar, that when refining the raw sugar the liquor simply filters through the animal char, and is not mixed in any way with it, and neither is there any blood used in the manufacture of sugar in this country or in any country exporting sugar to India. The use of animal char too, as regards the white sugar consumed in this country is confined to Indian Refineries only, and simply on account of the manufacture of raw sugar by the people themselves, notwithstanding the fact that they object to the use of animal char although there is no other means of making the raw sugar, white.

The countries exporting sugar to India do not make raw sugar at all, but manufacture the white sugar straight from the cane juice and the Beet juice by the sulphurous acid gas process, and without the use of animal char.

The losses incurred in the refining of raw sugar are enormous as in order to keep the refinery working throughout the year the raw material has to be stored, deterioration takes place, and on refining, frequently considerably over 50 per cent. comes out as uncrystallisable or grape sugar, what is commonly known as Molasses.

It is this Molasses, which when converted into spirit, brings to the Government such a large annual revenue, and I believe it to be the case that the Madras Government, on the one hand does everything in its power to extend the cultivation of the sugarcane by establishing experimental farms and pumping plants for irrigation, while on the other hand, unknowingly, it encourages the conversion of the sugar into spirit by paying higher rates for the spirit made from raw sugar only, than for the spirit which is made from molasses only.

The Member of Council who asked the question "Will the Government state what steps are being taken to check the alarming increase in the consumption of intoxicants in Bengal as shewn in the Report of the Commissioner of Excise for 1905-06" at the meeting of the Bengal Legislative Council on the 15th instant, might now know of a way to check the consumption of intoxicants *viz*, by encouraging sugar manufacture instead.

In the Madras Presidency there are proprietors of sugar refineries who make the manufacture of spirit to fulfil the Government contracts their chief business and purchase Jag-

gery for the sole purpose of converting it into spirit, notwithstanding the fact that sugar is much more valuable in its proper form than when converted into material for the fermenting house (I do not refer to the East India Distilleries which use for the refuse molasses). One of those proprietors has a refinery which has been closed for the past three years and he was quite unaware of the fact that sugar could be made straight for the cause which grow in abundance round his concern until I told him so.

He nevertheless still lacks confidence through past failures and instead of purchasing the necessary cane crushing and juice evaporating plant himself, he is looking out for some one else to do so.

There are thousands of people, both Europeans and Indians of the same wrong opinion, that before white sugar can be made, raw sugar has first to be made, and unfortunately the Agricultural Departments have been of the same wrong opinion. The Agricultural Department of the United Provinces however have recently been making some experiments in making sugar direct from the juice, but while the apparatus used by Mr. Hadi, which consists simply of several pans placed over a fire, the most important feature being the treatment of the juice with "dhaula" stalks and "kita" or soapnut for clarifying and bleaching, is useful enough for demonstration purposes, this method will have to be considerably improved to make sugar manufacture commercially successful which of course is necessary before any development can take place and this can only be done as has already been found in other countries by employing steam plant.

The United Provinces Agricultural Department have evidently recognised this also as it demonstrates the driving of the Centrifugal Machines by a steam engine, and it would have been to great advantage as Mr. Hadi himself sees, if a steam driven mill had also been obtained to do the work of the numerous cattle mills which are demonstrating in the best way possible how the juice can be left unexpressed from the canes. It follows therefore that if steam is necessary for the Centrifugals and Mills, it is also necessary for economising in fuel consumption and for boiling the juice whereby a higher output and a better quality of sugar is obtained.

It will no doubt be very many years before there are sufficient factories in the country to deal with the cane cultivation, and raw sugar will continue to be made by many cultivators, but as this raw sugar cannot be made into white sugar without the employment of animal char then it should be converted into a high class yellow sugar instead, which does not require the use of animal char, by using the most up-to-date machinery whereby the maximum amount of sugar and the minimum of molasses will be obtained from it. We must remember also that in

dealing with the raw sugar, fuel has to be purchased to work the refinery.

We have been told by the Agricultural Chemists to the Mysore Government, in this Fifth Annual Report that it should be the object of the cultivators to turn out a better quality of raw sugar for the refinery by using the centrifugal machine and extracting the molasses, but in making this statement he could not have given the consideration to the subject which it requires.

When the cultivator has once made the raw sugar the enormous losses have occurred, and no subsequent treatment will recover the quantity of sugar left unexpressed from the canes, or the quantity which has been converted into molasses in boiling. Even if put through the Centrifugal Machine, the high quality of raw sugar left in the basket would fetch such a high price, it would find a most profitable market in that state and the Refineries which attempted to purchase and work it, would be obliged to do exactly as they did in the United Kingdom and that is, close as they could not possibly compete with the imported sugar.

If the refinery, refining the "Gur" has a Distillery attached then it is manufactured of spirit from the molasses which enables it to keep open, and that is exactly what takes place in this country.

In Mysore there is such a concern, while canes of the best variety in the world containing, according to analysis made, as high as 21 per cent. "sucrose" and only a half per cent. "glucose" are grown. The same thing happens in every part of India, the canes are grown, half the sugar is burnt, and a considerable portion is turned into spirit.

Let us see what is done in the countries which dump the sugar into India.

The canes are crushed by powerful triple crushing plants, not one three-roller mill, but three roller mills in succession, 90 per cent., and even more, of the juice in the cane is expressed, but instead of this juice being boiled into a raw sugar it is made into sugar straight away, over 90 per cent. of the crystallised sugar being obtained by employing the following methods.

The juice as it leaves the Mills is immediately bleached by mixing with sulphurous acid gas, obtained by burning sulphur in a small furnace, and after bleaching, any acidity of the juice is immediately neutralised by the application of lime in the form of milk of lime, in order to prevent as far as possible the formation of "glucose", i.e., molasses, which is caused only by the acidity of the juice.

After liming, the filtering of the juice through cloth bags, the evaporation to a thick liquor, the boiling to grain in the Vacuum Pan, and the spinning of the wet sugar in the Centrifugals, are all carried out by the most up-to-date and economical machi-

nery, and in this way the maximum amount of sugar and the minimum of molasses is turned out by employing the crushed cane only, which goes straight from the mills to the furnaces, as fuel.

This is white sugar made without animal char filtration which is unnecessary as the cane juice is of a clear opaque colour, quite different to the dirty brown goor liquor.

That is how the cane sugar and beet sugar imported into this country is made and is the method that must be adopted in India also.

It is useless for the poor cultivator to attempt manufacturing sugar, as he has neither the knowledge nor the money required. What is wanted is co-operation on the joint stock system in order to obtain the necessary capital to purchase the plant. In numerous villages throughout the country where the canes are crushed independently by the cultivators, small steam plants should be established to deal with from 50 to 100 acres per season at a cost of about Rs. 16,500 without a Vacuum Pan which would cost another Rs. 5,500 say, to which the cultivators would send their canes. They would thus be freed from the cares and anxieties incidental to the manufacture and sale of the product, and they would be able to give more attention to improving the cultivation which would undoubtedly rapidly extend.

The small steam plants to run out from 1 to 2 tons of sugar per day instead of making raw sugar, would make pure white cane sugar thus avoiding the losses, and the sugar would be of a better quality than the Benares sugar now sold in Calcutta at Rs. 11 per maund of 80 lbs.

These steam plants would be extended also to suit the extension of cultivation and in time there would be large cane sugar factories where these small ones existed, and probably not a pound of sugar would be imported. From the enquiries which I have received from all parts of the country where the sugar-cane is grown I am as certain that that is what will take place, as I am that this paper is being read to-day.

It may be said that these factories would only work during the cane seasons; well! such is the case in other countries which have to import Indian labour, rice, cattle, &c., and have disadvantages such as cyclones and cattle disease to contend against and yet profits are made by sending their product to India. But the cane sugar factory in this country might also be a combination of factory and refinery, making white sugar from the canes grown in its vicinity and yellow crystals from the "Gur" made by the cultivators in outlying districts, and so would be able to work all the year round. The Baroda State Factory which I inspected some time ago was intended to work on these lines, with animal char plant however, but owing to not having the necessary machinery to obtain a high extraction

of juice when the price of the canes was high, owing to incompetent management, and the fact that the jaggery was brought up from the south of India in boats and converted itself into molasses on the way, although thousands of tons of Palm Tree Jaggery was available at comparatively easy distance, it was a failure, as it could only be. So much for the sugar cane.

The other source of sugar manufacture is the Date or Palmyra Tree already mentioned. There is such a large business done around Calcutta in the former, and in the Tinnevely district of the Madras Presidency in the latter.

Exactly the same thing is done with the juice from these trees when it is collected, as is done with the sugarcane juice. It is boiled to "Gur."

The same remedy as I have suggested with regard to the raw cane sugar should be adopted here also, that is, for the Date Tree good to be made into a high class yellow sugar which does not require the use of animal char in its manufacture. I would mention here, however, that the sugar turned out by the Calcutta and Madras Refineries, and which is made by employing animal char, finds a ready market in the country and I wonder after all if the objection to animal char is not only an imaginary one.

To manufacture the white sugar direct from the juice as it is collected from the trees a difficulty is met with which does not apply to sugar cane. I mean the difficulty of getting the juice in large quantities to the plant, for while the canes can easily be conveyed by carts, the juice from the trees collected in small pots is not so easily handled. There is one way out of this difficulty however, for in Queensland and elsewhere the juice is sometimes conveyed long distances from the cane crushing mills to the sugar making plant, and an attempt should certainly be made to avoid the enormous losses in sugar by manufacturing from the juice direct.

I would therefore, suggest that small steam plants similar to those I have recommended for the sugar cane centres, but without the cane crushing mill where there is no cane cultivation, be established in the centres of Date Tree Cultivation.

The posts of juice when taken from the trees could be emptied into a tank, and treated immediately with milk of lime in order to neutralise the acidity thus preventing the fermentation and the consequent formation of molasses.

These tanks of juice containing say 300 gallons each could easily collect the juice from a circle of several thousands of trees, and be conveyed to the plant for manufacturing into white sugar straight away.

The cost of such a plant to turn out to 1 ton of sugar per day could be about Rs. 6,000, and the sugar would have a value of s. 6 per maund at any rate.

The question is, who is to do this for like the cane cultiva-

tors, the men who collect the juice have not the knowledge or capital, so it must be done on the Joint Stock System.

We are told in another paper on the subject that there are millions of Date Trees growing wild in Central India, and there are millions of such trees growing wild in the forests of the Nizam's Dominions and other parts of India also of which no use is made, and I am confident that if such small plants were established to manufacture sugar direct from the Sugar Cane and Palm Tree Juice, the Indian Sugar Industry would be revolutionised.

I have often been told that my writings and figures in the various Indian Journals have aroused some interest in the matter and I have been inundated with letters of enquiry from all parts regarding sugar machinery for making white sugar from "Gur" but when I informed my correspondents that animal char was necessary I heard no more from them.

I understand that in some quarters the Government is blamed for the large annual imports of sugar which have a value of seven crores of rupees but the only blame that can be attached to Government is in not obtaining experts in the manufacture of sugar as well as experts in cultivation, for to my mind, showing how the enormous wastage of sugar in the country could be avoided, and how greater profit could be obtained from the present crops is of much more importance than showing the cultivators how to grow the cane and convert the sugar into a material only fit for the distillery, for that is exactly what the demonstrations of "Gur" manufacture amount to, and what the cultivators know only too well how to do, without being taught.

In the Punjab, and even in Calcutta, the boycotting of imported sugar has taken place, but the boycotting of sugar is only an expression of the people's impotency regarding sugar manufacture, and no amount of boycotting will help the development of Indian sugar.

If there is any desire to develop what should be the foremost agricultural industry of the country, and to have the indigenous product take the place of the imported one, then sugar must be made as elsewhere in the most economical manner possible, and without employing any material that will make its consumption obnoxious to the people.

In conclusion, I would anticipate the question "How are we to work such plants when we have no knowledge of the work"? by saying, that my firm Messrs. Martin and Co., Calcutta, who have now taken up Sugar work in earnest, will be only too glad to give all the necessary expert advice and assistance to any who wish to take up Sugar Manufacture.

CHROME TANNING.

The following paper was read by Alfred Chatterton, Superintendent of the School of Arts, Madras, at the Industrial Conference held at Calcutta on 29th December, 1906 :—

Hides and skins either in their raw condition or lightly tanned form important items in the export trade of India. Fluctuating from year to year and dependent to some extent upon the character of the season, they have for some years past averaged about 9 crores of rupees in value, but last year stimulated by the high prices obtainable in Europe and America the value of the trade rose to nearly 14 crores of rupees and in the list of Indian exports arranged in the order of their importance they have now reached the fourth place. The great bulk of the trade is done in the raw material and is mainly from the three Presidency ports of Calcutta, Bombay and Madras. The Calcutta trade is entirely in raw hides and skins, the Bombay trade includes a considerable percentage of tanned hides and skins, whilst in Madras only tanned hides are exported and in the skin trade nearly two-thirds of the value of the exports are in the tanned condition. Up to the year 1898 the export of raw material from Madras was non-existent, and although now in the skin trade it amounts to nearly 40 per cent it has not grown so rapidly as was anticipated some four or five years ago.

The demand for leather throughout the world seems to be rapidly increasing and being in excess of the supply prices have had an upward tendency for many years past. Excluding the great stock raising countries such as the Australian Commonwealth and the Argentine Republic, India is one of the few countries which on account of its poverty is still able to export a very large proportion of the hides and skins which it produces. The external trade has risen to nearly 14 crores of rupees, but it is impossible to even roughly estimate the value of the internal consumption. Possibly its value is as great or greater than that of the external trade and there is evidence that it is steadily rising. Indian skins are of good quality, but with few exceptions the hides are inferior and it is impossible to obtain a first-class manufactured product from them. Cawnpore is the centre of the modern leather trade and Bombay on a smaller scale produces leather in no way inferior. This industry has grown up under the stimulus of demands from the Military Department and its flourishing condition to-day is due not only to the expansion of military requirements but also to indents from other Government departments which in the aggregate require considerable supplies of leather goods.

In recent years a considerable internal demand has grown up for cheap machine-made boots and shoes and it is probable that the Swadeshi movement, especially in Bengal, has benefited local manufacturers of such goods. Excluding boots and shoes the value of which is not given separately, the trade returns show that from 25 to 30 lakhs of rupees worth of leather or leather goods are imported into India yearly. The bulk of this trade is probably in dressed skins for book-binding and upholstery work, in high-class leather for belting and machinery and to some extent in fancy leather goods. It is hardly probable that the whole of this not inconsiderable import business could be captured by native manufacturers, but there is absolutely no reason, except want of enterprise on the part of the manufacturers, why India should not produce dressed skins equal in quality to any made in Europe and America.

The bulk of the leather consumed in the country is very poor stuff and the methods of tanning are so crude that vast quantities of fairly good hides are converted into most inferior leather. The inefficiency of the indigenous tannery is notorious and in the aggregate the annual waste of material amounts to a sum which can only be estimated in crores of rupees. Boots and shoes, sandals, harness, musselsacks, paccali bags and bags for lifting water from wells for irrigation are among the chief articles for which the inferior country leather is in large demand. No information is available regarding this native business. The village chuckler was both tanner and leather worker, but in the south of India at any rate, the numerous tanneries which have sprung up for dealing with the surplus hides and skins available for the export trade, have also secured a good deal of his business as a tanner. Yet he is by no means extinct and the enormous increase in the export trade of the last two years indicates the probability that there is still a good deal of valuable material to be rescued from his primitive methods of treatment.

In one direction due to the increase in the number of wells used for irrigation from which the water is drawn by mhotes there has certainly been a considerable expansion in the local demand for leather. All over India the mhote or charsa is a familiar object and every year millions of good hides are converted into bad leather for these water-lifting appliances. The material is not altogether suited for the work and in constant use water bags have but a comparatively short life. If anything could be done to improve the quality of the leather and render it more durable it would be conferring a very substantial boon upon the ryot and in proportion to the improvement there would be set free a corresponding number of hides for export. The increasing demand for leather in India is due to the improvement in the condition of the people and sooner or later it will affect the export trade unless in the meantime

the available supplies of raw material are treated with greater respect and converted into better and more durable leather than at present. The main object of the present paper is to describe what is being done in Madras to bring about this very desirable result.

The mhote in good working order and with a water bag the capacity of which is properly proportioned to the weight of the bullocks is an extremely efficient method of lifting water when only animal power can be employed, but the normal condition of the ryot's mhote is far from satisfactory as the bag soon becomes brittle and tears and the rents are badly patched so that fully a third of the water which is lifted from the well falls back into it before the bag is emptied. In the matter of repairs the ryot is entirely in the hands of the village chuckler and if he can be supplied with a better material than the common country leather, there is but little doubt that as soon as he becomes practically acquainted with its advantages, he will readily adopt it even though it costs considerably more. In the south of India the piccotah with an iron bucket is almost universally employed in the Coast Districts where the water-bearing sands are not more than 12 or 15 feet from the surface and not a few mhotes, in use in brick wells, are of composite construction, sheet iron being used for the bag and leather only for the trunk. With care such mhotes are satisfactory, but they are easily damaged and difficult to repair. In many districts, the irrigation wells are large holes sunk into the rock and in practice it has been found that the leather bag is superior to the iron bucket, as the latter is so easily damaged against the rocky sides. Moreover, they must be very thin or else the weight becomes excessive and when very thin they require carefully looking after or they rapidly rust through. From time to time experiments have been made with various substitutes for leather, but nothing seems to have caught on and it remains, therefore, to improve the quality of the leather till a more satisfactory substitute for it can be found.

With these facts very forcibly impressed upon me whilst conducting a series of experiments on various types of water-lift in Southern India it was only natural, when I learnt of chrome leather and the very slight action which water has upon it, to experiment with it and ascertain whether it was feasible or not to manufacture the leather in the country. The practical tanners of Madras whom I consulted in the matter were unanimously of opinion that owing to the climate chrome tanning would be a failure. They had made experiments themselves and their experiments led to nothing because their object in view was to produce a material suitable for export. That was not the way I looked at the matter at all and it seemed to me that though it might be impracticable to manufacture chrome leather or

glacé kid which would find a market in Europe or America, yet it might be possible to produce in India chrome leather suited to Indian requirements. Accordingly the Government of Madras were addressed on the subject and a sum of Rs. 2,000 was placed at my disposal for experiments on the lines which I indicated, the main object being to produce a chrome tanned leather suitable for use in well irrigation. Neither I nor my assistant, Mr. Brand, who was mainly in charge of the experiments during their initial stages, had any previous knowledge of leather manufacture and naturally we began working on a small scale, tried many experiments and met with not a few failures, but ultimately we were able to demonstrate the practicability of the original idea. That was probably the easiest part of the work as we were able to obtain much assistance from such books as Procter's "Principles of Leather Manufacture" and in working out the local Indian problem the Secretary of State for India permitted us to enlist the services of a first-class English expert.

The first stage has been successfully passed and we are now engaged in the more difficult matter of persuading the people of this country to give Indian chrome leather a fair trial. We can manufacture chrome leather good enough for most purposes and the experience of the last two years has shown that the original anticipations of its superiority have been fully justified. The price list of our manufactures, which we have issued recently, contains a large number of favourable testimonials from people who have used it, but still the demand for chrome leather is small when compared with the enormous consumption of leather and only very slowly do sales increase. Nevertheless, we are making progress and have now some sort of assurance that ultimately the chrome processes of manufacture will supersede the crude and wasteful methods of the chukler.

Many hundreds of water buckets have been manufactured and brought into use in all parts of India and the general consensus of opinion of those who have used them is that the material is in every way superior to ordinary country leather and the life of a bucket very much longer. It is difficult to say what is the relative durability of the two kinds of leather on account of the variations in quality of the hides, but it may be safely assumed that chrome leather made from good hides is at least twice as durable as the best country tanned leather. As will be seen later on there is no great difference in the cost of manufacturing leather by the two processes, though naturally in an experimental tannery like that attached to the School of Arts in Madras where the work can only be carried on on a comparatively small scale, the cost of making chrome leather is much heavier than it would be in a large tannery doing a big trade. If we made bark tanned leather under

similar conditions, the cost of doing so would be much greater than it is in an ordinary native tannery.

Having produced chrome leather suitable for water bags, or kavalais as they are locally known, it was natural to experiment with the leather in other directions and boots and shoes, sandals, harness and a great variety of miscellaneous articles have been made from it. The natural colour of the leather is a pale lavender blue which is almost white when the leather is made in weak solutions. The colour is not at all displeasing and a good deal of it is worked up in the undyed condition, especially for harness in Madras. Usually, however, after the leather is tanned it has to be dyed which can readily be done and black leather and several shades of brown leather are regularly manufactured. Experiments also have been made in tanning skins and preparing glacé kid and though it must be confessed that our productions are not equal in finish to those imported, they have proved serviceable enough and being much cheaper have found a fairly ready sale. So far our work has been done on a small scale and almost entirely without the aid of machinery, but the Government of Madras have recently sanctioned the opening of a new tannery in the neighbourhood of Madras in which the manufacture of leather on a much larger scale will be possible. The plans for the new tannery have been prepared and include the installation of a fairly complete set of modern leather-dressing machinery. It will then be possible to do much better work and ultimately we hope to be able to materially displace the leather now imported from Europe and America.

Characteristics of Chrome Leather.—I do not propose to discuss these at any length, but it may be well to briefly draw attention to some of the more important points in which it differs from ordinary leather. In the first place, from a given weight of hide substance, the weight of chrome leather produced is considerably less than when it is converted into bark tanned leather. In the chrome process the hide substance is acted upon by the chemicals in the tanning bath, but very little additional weight is gained by absorption, whereas, as is well known, a very marked increase in weight is obtained when the ordinary bark tanning processes are properly conducted. From ten pounds of flint dry hide the average weight of bark tanned leather produced is nearly ten lbs., but the weight of chrome leather will be not more than $7\frac{1}{2}$ lbs. The ratio is roughly three-fourths. It therefore follows that buying chrome leather by the pound the price will always be at least 33 per cent. more than that of bark tanned leather. Chrome tanned leather is stronger than bark tanned leather, so much so that the loss in weight and decrease in sectional area is actually accompanied by an increase in the strength. Its chief physical characteristic is its extreme softness, which renders it very suitable

for boot and shoe uppers. In many cases, however, stiffness is distinctly desirable, and such articles as solid leather bags and trunks are much better made of ordinary leather. Chrome tanned leather unless very carefully manufactured tends to stretch considerably more than bark tanned leather, and that for certain kinds of work has been counted a serious disadvantage, especially when it has to be employed for military equipment. With care it is, however, possible to manufacture chrome leather which possesses no more stretch than ordinary leather and which at the same time has a considerably greater tensile strength. Harness made from the leather turned out in Madras has proved perfectly satisfactory, and large quantities of belting are in use where centrifugal pumps driven by oil-engines are lifting water for irrigation. This is very trying work for belting, and though we have not yet succeeded in producing an absolutely satisfactory chrome leather belt, yet those made in Madras are able to hold their own in price and durability when compared with the belts formerly used.

In the manufacture of sole leather the chrome process yields a material which is extremely durable, and it has been employed in making up thousands of pairs of boots and sandals. The leather is sufficiently soft to make it comfortable to the feet, and it possesses a power of resisting abrasion which has never been approached by the very best English sole leather. For boots and shoes it possesses one serious disadvantage due to the fact that, when wet, the surface becomes slippery and it is not altogether safe to walk about on chrome tanned soles in cities which are paved with asphalt or stone flags. This is a matter of no importance in India where pavements are almost non-existent, and the general suitability of chrome leather for both soles and uppers is attested by the popularity of Madras chrome leather boots among the planters of India. Thanks to the parcel-post system, the planters of Assam and of remote stations in the Himalayas are able to get boots and shoes from Madras as easily and as cheaply as from Cawnpore or Calcutta.

The final property of chrome leather to which I wish to draw attention is its peculiar behaviour when wetted. Ordinary leather when wetted and dried becomes hard and stiff, and if soaked in water for any length of time, the water becomes turbid due to the solution of some of the constituents of the leather. On the other hand, chrome leather when wetted and dried remains quite soft, and prolonged immersion in water has no effect upon it. If ordinary leather be boiled, in a few minutes it is practically destroyed, whereas very little harm is done in the same time to chrome leather. Chrome leather is in no sense waterproof, but for practical purposes it is unaffected by water and is consequently *par excellence* the material best suited for exposure to the action of moisture. It is this property that led us to take it up in the first instance

for water bags and it is that which renders it so popular among people who live in damp climates. Ordinary leather to be kept in good condition must be treated with dressings of some kind or other from time to time and, although these preparations may be used for chrome leather, they are not needed to anything like the same extent and neglect to employ them does very little harm.

Methods of chrome tanning employed in Madras.—Three years ago under the orders of the Government of India a Monograph on Tanning and Working in Leather was specially prepared in each Province of India and those who are desirous of information regarding native methods of tanning will do well to consult these papers. They can be obtained from any of the Agents for the sale of Government publications, but so rapid has been the change during the last two or three years in the conditions under which the export trade is carried on that they are no longer reliable guides as to the commercial aspects of tanning.

In an addendum to the Madras Monograph a brief account of the earlier experiments in chrome tanning is given and in the remainder of this paper I propose to amplify that note and describe in some detail the actual methods of working employed in the Chrome Leather Department so that any one who wishes to start this industry or to carry on similar experiments may be able to obtain full information regarding our work in Madras.

Hides and skins.—The purchase of suitable raw material has proved to be one of the greatest difficulties we have had to contend with, as not only at the outset were we inexperienced in regard to the methods of the trade, but we had little or no knowledge as to what was best suited for the chrome tanning process. There are a considerable number of tanneries in the neighbourhood of Madras, but they mainly deal with coast hides or Calcutta rejections and it is practically impossible to get suitable hides from them. We soon found that satisfactory chrome leather could only be produced from good hides and latterly for light hides we rely almost entirely upon those which can be obtained from the Madras slaughter-houses. For a heavier class of hide, the best of which are good enough for harness leather we mainly rely upon the supply of Nellore cow hides of which hitherto we have been able to get as many as we wanted at very reasonable prices. For water bags, or kavalais as they are locally called, we found light cow hides unsatisfactory and expensive and, unless specially ordered otherwise, we invariably employ light buffs which are usually free from brands and are fairly cheap. There is a very considerable demand for chrome tanned sole leather which has to be made from hides much heavier than those usually obtainable in the local market and we have had some difficulty in getting a sufficient quantity. Buffalo hides are invariably used and in the wet salted condi-

tion they may weigh from 50 to 100 lbs. depending upon the extent of the spread. One fairly large consignment of hides from Rangoon proved extremely satisfactory in regard to price, but in the absence of machinery for splitting the hides we found many of them too thick and they could only be worked up by incurring a heavy loss in shaving the leather down to the suitable thickness. Latterly, we have purchased dry salted and arsenically cured hides in the Calcutta market and have found them fairly satisfactory. The demand for our sole leather enables us now to make fairly large purchases at a time and we have less difficulty as the business we can offer is becoming worth the while of those in the trade to take up. Good calf skins we have found it almost impossible to procure, but there has been no difficulty in the matter of goat and sheep skins.

It may here be convenient to mention that we have a very considerable business in tanning skins of wild animals such as those of the tiger, panther, bear and various kinds of deer with the hair on and the results are extremely satisfactory if the skins reach us in good condition. The hair is unaffected by the chrome liquor and the skins when finished possess all the qualities of a good chrome leather. In a similar way we have tanned a good many crocodile hides and a large number of snake skins, the latter being in great demand for the manufacture of fancy articles, especially ladies' waist belts. In their natural colour they look very well and can be readily dyed to any required shade. Snake skins are very plentiful in India but so far as I know this is the first attempt that has ever been made to turn them to practical account. To obtain good results, the skins must not be damaged and special care has to be taken in killing the snakes.

Processes preliminary to tanning.—These differ very little from those ordinarily practised in native tanneries but if good results are to be obtained, it is necessary to exercise the greatest possible care at each stage. The first step is to get the hides back into their natural condition and free from blood and dirt. The dried hides require soaking in water for about 24 hours and when quite soft should be washed in several changes of water. The green and wet salted hides merely require to be thoroughly washed, and they are then in a fit condition to be put in the lime pits. Owing to the fact that we are not allowed to establish lime pits on the premises of the School of Arts, this work has to be done outside the Madras Municipal limits in a native tannery and great difficulty has been experienced in getting native tanners to do the work properly. The pits are worked in a series of four, the first pit containing the oldest lime and the last pit containing the fresh lime. The hides pass through the series of pits remaining in each pit about $2\frac{1}{2}$ days, so that the whole liming process lasts about 10 days. The operations of unhairing, fleshing and scudding need not be

described here in detail as there is nothing novel about them. It is most important that whilst the hides should be well plumped up or swollen by the action of the lime, this should not be continued long enough to allow of the lime dissolving any appreciable quantity of the hide substance. If this is not carefully attended to the final leather will certainly be unsatisfactory. In the manufacture of good sole leather this is of the greatest possible importance, and latterly, we have considerably shortened liming process by the use of sulphide of sodium. The process adopted is as follows:—

About one pound of sodium sulphide is dissolved in as small a quantity of water as possible and to the solution from 6 to 8 lbs. of freshly slaked shell lime is added and the mixture thoroughly stirred. More water is then added to bring it to the consistency of a thick cream. This mixture is allowed to stand for about 3 hours and is then spread over the flesh side of the hides to be unhaired, after which they are folded up and kept in a cool moist place for about 24 hours, when the hair will be found to be sufficiently loosened to be removed in the ordinary way.

After unhairing the hides are washed in water and put into a tub of fresh lime where in 24 hours they are sufficiently plumped and ready for further treatment. After scudding it is necessary to remove as far as possible all traces of lime from the hides, and to this end, they are thoroughly washed in water and well trodded over by the coolies. The last traces of lime are removed by means of lactic acid of which a solution containing $\frac{1}{2}$ per cent. is employed. After being put in the solution, the hides rapidly lose their plumpness and become very slippery to the touch. To test whether the last traces of lime are removed or not, a small piece is cut out of the thickest portion of the hide and to the cut surface a drop of the solution of phenol phthalein in alcohol is applied. If the cut surface turns red, it indicates that there is still some lime left, on the other hand if no colouration is produced it may be taken that the hide has been sufficiently delimed. Every hide is tested in this way and as soon as it passes the test is removed from the lactic acid bath and well washed in clean water.

Pickling.—The next operation through which the hides must pass is that of pickling which gives a preliminary alum tannage to the surface of the hides and thus prevents to a large extent the formation of a drawn grain when the hides are finally tanned. For the pickling solution 6 lbs. of potash alum and 4 lbs. of common salt per 100 lbs. of the drained weight of the delimed hides are dissolved in sufficient water contained in a large rotary drum. The hides are put into this solution and kept in it for about 24 hours, the drum being rotated from time to time by hand.

Although chrome tanning can be carried on in pits or tubs

it is more convenient to employ large drums to hold the tanning solution. They are made locally of teakwood and are mounted on a suitable wooden framing. The weight of the drum is carried by two centrally placed brass rings one on each side which rest on friction rollers supported by iron pedestals attached to the framing. On one side of the drum is fixed a large cast iron spur wheel of the same diameter as the drum and it is driven by a small pinion mounted on the framing. The drums we have constructed in Madras range from 6 to 8 feet in diameter and from 3 feet to 4 feet 6 inches in width. At present they are turned by hand, coolies being employed for the purpose, but it is ultimately intended to drive them all from a line of shafting. By hand power it is not possible to revolve them more than two or three times a minute, but, when driven by a belt from shafting, the gearing will be arranged so that, the drums make from 4 to 8 revolutions a minute. For tanning the slower speeds are sufficient but for washing and deliming a more violent action is desirable and the higher speed is necessary. Inside the drums strong wooden pegs are fixed so as to turn the hides over as the drums rotate. This greatly quickens the process of tanning and the drums can also be usefully employed for washing, pickling and for removing the last traces of acid after the tanning processes are complete.

Chrome tanning.—There are two methods of chrome tanning known respectively as the single and the double bath process. The latter probably produces the finest leather, but the former is both cheaper and simpler to work and has been adopted in Madras exclusively as it yields sufficiently good results, and with the unskilled labour available there is much less risk of anything going wrong.

To secure uniform results and to save tanners, who are not chemists, from the risks of buying their own chemicals a number of tanning liquors have been put on the market ready for use. Experiments on a fairly extensive scale were made with two of these—one the well-known Tanolin which was supplied to us by the Martin Dennis Chrome Tannage Company of Newark, New Jersey, and the other by Messrs. Lepetit, Dollfus and Gansser of Milan whose Chromo-Chrome produced excellent leather. With both the results were quite satisfactory, but the leather was no better than that made using the very simple process described by Professor Procter on page 212 of his *Principles of Leather Manufacture*. The tanning solution is made by dissolving 10 lbs. of chrome alum in 4 gallons of water. To effect the solution readily the alum should be crushed to a fine powder. Between 3 and 3½ lbs. of ordinary washing soda is dissolved in water and slowly added to the solution of alum. Rapid effervescence takes place and the mixture should be thoroughly stirred. If too much soda is added, a heavy precipitate is formed and there is a waste of

valuable chemicals. The chrome alum costs in Madras Rs. 14-8-0 per cwt. or roughly 2 annas a pound and one pound of chrome alum is sufficient for the production of 3 lbs. of finished leather. The carbonate of soda costs Rs. 7-8-0 per cwt., equivalent to slightly more than one anna a pound and as only one pound of washing soda is required for 10 lbs. of leather, it will be seen that the total cost of the chemicals employed in the tanning solution is very small and is actually less than that of bark used in the ordinary processes of tanning. The tanning solution prepared in the above proportions contains 25 per cent. of chrome alum and is used as a stock solution. By diluting it with water solutions of any strength are readily prepared. Usually tanning commences in a one per cent. solution and ends in a solution the strength of which is about 5 per cent.

The tanning is done in the drums already described and usually about 500 or 600 lbs. of pelt are put in each drum. The drums are arranged in a series through which the hides pass, first entering the drum containing the weakest solution and finally passing out of that containing the strongest. To the tanning liquor in the first drum about 15 lbs. of sodium sulphate are added to prevent the formation of a drawn grain. The time occupied in completing the tanning processes depends upon the thickness of the hides. Sheep and goat skins are tanned in a few hours, cow hides in from one to three days, whilst the thick buffalo hides used as sole leather take from a week to ten days. The process could be quickened considerably if the drums were worked by night as well as by day and it would also be shortened if power were employed to drive the drums at a faster speed and continuously. The hides are considered to be tanned sufficiently when the blue colour produced by the chrome liquor has penetrated right through the hide and there is no white streak in the centre. Experience seems to indicate that there is considerable danger of producing bad leather by over-tanning and that where the hides are of very unequal thickness in different parts they should be rounded off as much as possible before being put in the tanning drums. Leather which has been over-tanned soon becomes brittle and useless and it is impossible to emphasize too much the necessity for care at this stage.

As soon as it is decided that the tanning is complete the hides are removed from the solution and spread out one over the other on a wooden horse where they are allowed to soak and drain for 24 hours. The tanning liquor remaining in the hides contains a considerable percentage of sulphuric acid and it is absolutely essential that this should be completely removed or the leather will perish in a very short time. It may be here remarked that the three principal causes of the production of bad chrome leather are (1) over-liming, (2) over-tanning, and (3) acid in the finished leather. It is not difficult to guard against

damage arising from these causes once they are recognised, but there is no doubt that a good deal of chrome leather made both in Madras and elsewhere has been unsatisfactory through neglect to take proper precautions to prevent damage arising from the operation of any one or all of them. To remove the acid the hides are first washed in several changes of water and then drummed in a half per cent. solution of borax, the quantity of borax used being 3 lbs. per 100 lbs. of wet leather. Litmus paper is used to test whether or not the acid has been completely removed. When it is ascertained that the leather is free from acid it is taken out of the borax solution and well washed in several changes of water to remove any soluble salts that may have formed in the substance of the leather.

Fat-liquoring.—For leather which is not to be dyed this is the final chemical process to which it is subjected, any further treatment being of a purely mechanical nature. The "Fat-liquor" is an emulsion of oil in a solution of soap and when the chrome leather is put into this the oil is absorbed and renders the leather soft and pliable. The soap employed is made in the following way:—

One hundred lbs. of castor-oil selected, because it is both cheap and gives satisfactory results, are placed in a wooden tub and 20 lbs. of caustic potash are dissolved in water and allowed to cool. When cold the caustic potash solution is slowly poured into the castor-oil, the mixture being constantly stirred and the stirring is continued for about quarter of an hour so as to ensure that the potash and oil are thoroughly mixed. After about 24 hours the soap is ready for use.

To prepare the fat-liquor 7 lbs. of the soap are dissolved in two gallons of boiling water to which is added an equal quantity of castor-oil and the mixture is boiled. It is then placed in an emulsifier which consists of a cylinder made of tin plate about 3 feet 6 inches high and about 10 inches in diameter. In this works a loosely-fitting piston attached to a long handle. The piston is perforated with a large number of small holes and by working it up and down the cylinder after the mixture of oil and soap has been put in the emulsification is completed. When it is desired to produce the better qualities of leather 2 lbs. of egg yolk are added to the emulsion and thoroughly incorporated with it. When the emulsion is properly prepared it will mix with hot water without showing any trace of oil. For leather intended for water bags and rough usage it is desirable to make it absorb as much oil as possible and in practice we find that about 10 per cent. will be taken up by the leather. This gives the surface a dirty appearance but that is a matter of no consequence.

The hides are fat-liquored in a drum which has been previously heated by means of boiling water. The door of the drum is closed and the requisite quantity of concentrated fat-liquor diluted

with sufficient hot water at a temperature of 140°F. is passed in through the hollow axle of the drum which is then set in motion. After drumming for about half an hour it will be found that the fat-liquor has been entirely absorbed by the hides which are removed and laid over a horse to drain for several hours. Afterwards the hides are sleeked on stone tables and then stretched on wooden frames to dry. When the hides are dry they are taken off the frames and subjected to the staking process which gives the leather that softness which is one of its principal characteristics. This completes the process of converting both skins and hides into undyed chrome leather. When it is essential that the leather should have a good appearance the percentage of fat-liquor which the hides are allowed to absorb must be reduced and when the staking operations are completed a little French chalk is dusted over the grain side. As we have no machinery for staking or shaving leather, the flesh side of the leather is necessarily rough and ragged and for any work in which a certain amount of finish is required the leather has to be shaved by hand.

Sole leather.—The process of unhairing now employed when the hides are destined for sole leather has already been described. The tanning takes from a week to ten days and the subsequent removal of the acid has to be carefully attended to on account of the greater thickness of the leather. It seems doubtful whether the process of fat-liquoring is necessary. At present the leather is drummed in a concentrated solution of the fat-liquor the proportion employed being about 5 per cent. of the weight of the sammed leather. After fat-liquoring the leather is brought into a sammed condition either by allowing it to dry naturally or by passing it between a pair of rollers. When nearly dry it is ready for stuffing. The composition of the mixture employed is as follows:—50 lbs. of Burmese paraffin, 12½ lbs. of tallow and 2½ lbs. of resin. For the stuffing process it is advisable to use a flat copper or aluminium dish large enough to take the biggest of the butts which go through the process. The dish should be from 6 to 8 inches deep and supported on an iron frame. Underneath a fire is placed and the mixture of paraffin, tallow and resin melted. The sole leather butts in a sammed or partially dried condition are put into the melted mixture the temperature of which is sufficiently high to cause the air in the pores of the leather and the remaining moisture to rapidly pass off in bubbles. The stuffing penetrates thoroughly into the substance of the leather and when all the moisture has been driven off as is indicated by the cessation of the stream of bubbles rising from the surface of the leather it is removed from the dish and allowed to drain. As soon as it is cold the leather is rolled under considerable pressure between heavy rollers and is then ready for use.

Dyed leathers.—Most of the leather required for boots and shoes, saddlery and similar articles has to be dyed either black or some shade of brown as the natural colour of the leather meets

with but little appreciation. This adds considerably to the cost of the leather and from the beginning it was recognised that it would be desirable to devise a simple process which could be carried out without having resort to the comparatively expensive aniline dyes. Experiments in this direction have resulted in the production of a very satisfactory brown leather prepared by subjecting the neutralised leather after it leaves the tanning solution to a superficial tannage with avaram bark (*Cassia auriculata*). The tanning liquor contains about 5 per cent. of bark and the hides are drummed in it for about half an hour. They are then removed and washed, and again drummed in a solution of Bichromate of Potash, there being about 8 oz. of the salt to every 100 lbs. of sammed leather. After this the leather is fat-liquored and finished in the usual way. The depth of colour can be increased by prolonging what is practically a bark tanning process till in the extreme limit a combination tannage is produced which will be dealt with later on. The brown leather thus produced was first intended only for the uppers of cheap ammunition boots. When worked up with the ordinary leather dressings it has proved quite satisfactory for all classes of goods though many people prefer a much darker colour.

Coloured leathers for boot uppers pass through exactly the same processes as those already described but it is permissible to allow of a somewhat longer liming so as to produce greater softness and flexibility. It is best to apply a mordant to the leather after the acid has been washed out of it and before the fat-liquoring process. The dyes employed are all aniline dyes and to fix them satisfactorily the leather must first be mordanted with some vegetable tanning material. In Madras we have found avaram bark both cheap and satisfactory. The leather after being neutralised is well struck out on the grain side and then transferred to a drum containing the decoction of bark of which about 5 per cent. on the weight of the sammed leather is employed. The temperature should be about 140°F. and the drumming should last for about half an hour. The leather which will then be of a light yellow colour is removed and washed in several changes of water after which it is spread out on the sleeking table and thoroughly struck out on the flesh side so as to remove as far as possible all surplus moisture. The leather is now ready for fat-liquoring about 5 per cent. of which is used on the struck out weight of the leather. The fat-liquoring is done in a drum at a temperature of about 160°F. and when all the oil has been absorbed the hides are taken out and piled on a table where they are allowed to remain and gradually cool down. Each hide or skin is dipped in hot water and then well struck out on the grain side so as to remove all surface grease which if allowed to remain would make the subsequent dyeing uneven. With the enormous number of dyes now available any colour and almost any shade of that colour can easily be produced by using suitable

combinations. So far we have not attempted to do anything more than turn out a good black dyed leather or brown leathers in light, medium and dark shades. For experiments in book-binding leathers a few coloured skins have been produced and a fair number of skins have been dyed scarlet to satisfy the taste of Mahomedans in the matter of chadas.

The dyes we employ are mainly of English manufacture being phosphine substitute, new acid green, azoflavine R and acid green. The proportion in which they are mixed depends upon the colour required and as typical mixtures the following are given :—

- (1) 4 oz. of phosphine substitute, and 1 oz. of new acid brown.
- (2) 3 oz. of phosphine substitute, 3 oz. of new acid brown and $\frac{1}{4}$ oz. of acid green.
- (3) 4 oz. of phosphine substitute, and 3 oz. of new acid brown.
- (4) 5 oz. of phosphine substitute, 2 oz. of new acid brown and $\frac{1}{2}$ oz. of acid green.

These quantities are for a dozen average sized skins. The total quantity of dye stuff required varies with different classes of skins about half an ounce being required for a sheep skin and a little over an ounce for a light cow hide. The aniline dyes are dissolved in boiling water and the solution is filtered to remove any suspended impurities. The dyeing is done in drums at a temperature of about 150°F. About half the quantity of the dye stuff is used at the outset and the rest is added after about quarter of an hour. At the end of another 30 minutes three-fourths of the dyeing liquor is run out of the drum and egg yolk added to the extent of about 1 per cent. on the struck out weight of the leather after which the drumming is continued for another 20 minutes when the goods are removed, horsed up and struck out. The skins are stretched on boards or frames to dry and the grain side is lightly rubbed over with a mixture containing 20 per cent. of glycerine in water. Before the skins are quite dry they are removed, being then in a good condition for staking which is entirely done by hand. After staking the colour may be improved by topping with a half per cent. solution of the dye used warm and applied with a soft brush. When this is done the goods should be again staked and then finally dried right out so as to be in a condition to receive a coat of seasoning.

Seasoning.—This is made by taking 3 oz. of white of egg and one pound of milk and making up with water to one gallon adding sufficient of the dye solution to tint the mixture. The seasoning is applied lightly on the grain side and when the goods are sufficiently dry they are glazed in a pendulum machine and afterwards re-staked and then the seasoning and glazing processes are gone through a second time, at the end of which the leather is ready for use.

Blacks.—Experiments with aniline dyes such as Corvoline B.T. using Cutch as a mordant have not been very successful and we have obtained better results with Haematine or logwood extract followed by the application of ferrous sulphate. About $1\frac{1}{2}$ per cent. of logwood extract calculated on the drained neutralised weight of the leather is dissolved in water to which is also added a quantity of washing soda equal in weight to about one-eighth of the weight of the logwood extract. The leather is first drummed in this solution and in about half an hour obtains a deep blue-black colour. The goods are then removed from the drum and sleeked well on the grain side and “pleated,” i.e., the skin is laid on the table, doubled down the ridge with the flesh side inside and the shanks and belly are sleeked over so as to stick them together the idea being to keep the flesh side protected from contact with the iron solution through which the goods are now passed. This consists of a 1 per cent. solution of ferrous sulphate through which the skins are pulled twice and then immediately washed in hot water and struck out. The iron in the ferrous sulphate acts upon the small quantity of tannin present in the logwood extract and turns the blue-black shade into a thoroughly good black. It is necessary to carefully remove any excess of ferrous sulphate that the leather may contain or the process of fat-liquoring will be unsuccessful. This operation is identically the same as for brown leather and need not be described again. The seasoning for blacks should be of the following composition:—

Two oz. of logwood extract is dissolved in a quart of hot water and allowed to cool; $\frac{3}{4}$ oz. of ferrous sulphate in a quart of cold water. One pint of blood, 1 pint of milk and $\frac{1}{2}$ oz. of glycerine are diluted with one quart of water. To this the logwood extract solution is added and the whole well mixed. Finally the ferrous sulphate solution is added and the whole made up to one gallon with water. The mixture is applied with a sponge and the goods glazed for the first time whilst very slightly damp. The staking, seasoning and glazing may with advantage be repeated after which the leather is ready for the market.

Combination Tannage.—For some purposes chrome leather is distinctly inferior to well tanned bark leather and it is possible by subjecting the hides to both processes to obtain a material which possesses in a marked degree the good qualities of both tannages. The production of such leathers will of course be much more expensive than when either process is used alone and till quite recently it has been considered outside our sphere of work to attempt to produce the more expensive kinds of leather. In certain directions, however, we have met with a distinct demand for a locally produced leather of high quality and this we have endeavoured to meet by supplying combination tannages.

There are three ways of carrying out a combination tannage. Either process may be carried out first, or the two tanning liquors may be mixed together and allowed to act simultaneously. Most

excellent leather has been produced by purchasing from local tanners hides and skins which have been lightly tanned in avaram bark but not subjected to any process of dyeing with myrabolams or stuffing with grease. These lightly tanned kips or skins were chrome tanned in the usual way and either finished in their natural colour or dyed brown or black. The resulting leather has proved very suitable for many purposes and as the natural colour is not an unpleasing brown it does not really cost anything more than ordinary chrome leather dyed brown. In a similar way sole leather has been made from combination tanned hides, but there has not yet been time to ascertain whether there is any very marked advantage in the process. For highly finished boots it can certainly be employed as it lends itself more readily to a neat finish than does ordinary chrome sole leather. So far it has been mainly with a view to producing good harness leather that we have experimented with combination tannages and we have arrived at the definite result that there seems to be a limit to the amount of stretch in combination tanned leather and stirrup leathers made from it have proved quite satisfactory and have shown no stretch whatever after being made up. Harness similarly has proved extremely satisfactory and being unaffected by moisture has proved in every way suited for damp climates and wet weather. The combination tannage produces an excellent leather for boot uppers having rather more body in it than ordinary chrome leather whilst at the same time it is equally soft and unaffected by water.

Experiments have also been made in which the hides are first subjected to the chrome process and then tanned in an avaram bark solution. As already mentioned this process has been largely employed more with a view to dyeing leather than to materially altering its properties and so far it has proved perfectly satisfactory. Experiments with a more prolonged vegetable bark tannage have not been satisfactory and at present it seems doubtful if this order of tanning will be able to compete with that in which the vegetable process takes precedence. Tanning with mixed solutions has not yet been tried.

Cost of Chrome Tanning.—In native Tanneries in the Madras Presidency the rate usually charged for tanning hides varies from 2 to 2½ annas per lb. on the weight of leather produced. Chrome tanning costs us slightly over 3 annas per lb., so that if allowance be made for the smaller weight of chrome leather produced from a given weight of hides, the actual cost of tanning a hide by the chrome process is no greater than by the bark process. Dyed leathers however cost considerably more, but then they are only used for superior work, and it would be unfair to compare them with the normal productions of a country tannery. It is important to remember that the chrome process of tanning is a much shorter one and that consequently much less capital is locked up in the tannery. The saving of capital which is thus effected is more than sufficient to provide for the extra expense in plant

and machinery which a well-equipped chrome tannery involves when compared with the ordinary bark tannery.

Conclusion.—The processes of chrome tanning which we follow in Madras have been described in the above general terms not because there is any novelty about them but because there is in India an idea more or less prevalent that chrome tanning involves the introduction of machinery on a large scale and methods of operating better adapted for employment among more advanced communities. Whilst the trade in hides and skins is in a flourishing condition the art of tanning in India except in a few tanneries is in a deplorably backward state. In the Madras Presidency where the tanned skin trade represents the highest development of native tanning nearly all the best skins are bought up and exported to Europe or America in a raw state. Last year the average value of each raw skin exported was nearly Re. 1-12-0, whilst the average value of tanned skins was only Re. 1-3-0. The report of the Committee of the Society of Arts on leather for book-binding condemned East-India skins tanned with avaram bark as being the worst and most unfit from which to manufacture book-binding leathers. This was not due to any defect in the skins themselves but solely because avaram bark contains catechol tannin and experiments have clearly demonstrated that to secure the necessary durability in leather bindings those only which have been prepared with a pyrogallol tannin can be used. The effect of this report has been to restrict the market for Madras tanned sheep and goat skins and to encourage the export of all the best skins in the raw state. Myrabolams and divi-divi both yield excellent pyrogallol tannins. The former are already exported on a large scale and it would probably be wise to ascertain whether these natural products of the soil could not be utilised, not so much to bolster up a moribund industry as by a rearrangement of ideas, to create a new one. The hides and skins of the domestic animals of India have come to be an important asset and it seems desirable that the most, that can be made, should be made of this national source of wealth. The abolition of the crude system of branding cattle which now prevails would probably add fully a crore of rupees to the value of the exports of hides and the abolition of the village tanner would even lead to greater results. It will probably be a long time before the people can be induced to abandon branding, but the gradual extension of the chrome process and the keener demand for raw hides which the enhanced value of leather now enables dealers to offer will do much to improve the methods of realising the real value of hides and skins.

ESSENTIAL OILS.

By J. N. BANERJEE Esq., CALCUTTA.

IN some part of Bengal there are various kinds of grass which grows luxuriantly from which we can easily extract the essence of Lemon and Peppermint, with a trifle cost. It has a strong lemon and peppermint-like odour which does not usually fade even when cut or dried.

Put the same grass in an earthen pot half filled with water and close the mouth with a well fitting cover securely fixed with flour gum. This cover has a central hole in which is placed a pipe of the shape of an inverted tobacco pipe, and similarly fixed. The whole apparatus is to be placed on an oven, and at the end of the pipe should be held a glass flask immersed in a tub full of cold water. The hot water vapour and with it the otto or essence of the grass will come over and will be condensed in the flask. At the end you would find drops of a very fragrant oily substance floating on the surface of the water in the flask. These drops should be separated by a piece of new blotting paper. This is, I believe the lemon-otto or essence as well as peppermint too, sold in the bazar. When this otto is dissolved in ether or alcohol the essence is prepared. The water left in the flask will have a very pleasant smell and, I think, might be sold as lemon or peppermint water, for it is in no way inferior to rose water in its scent and refreshing qualities.

I can arrange myself to supply those gentlemen who intend to cultivate Lemon or Peppermint grass with seeds at a very nominal price.

The plain and simple apparatus described above and almost entirely made of earth, and therefore quite inexpensive, is worthy substitute for the rather costly metal distilled apparatus of the market and can be easily obtained by giving orders to a potter and used with success. Instead of the glass flask a long-necked pitcher might be used.

INDIAN ESSENTIAL OILS.

BY DAVID HOOPER, ESQ., F.I.C., F.C.S., F.L.S.,

Industrial Section, Indian Museum.

In introducing to the Indian Industrial Conference the subject of perfumes one is struck by the fact that so little has been previously written on the subject. India as an eastern and tropical country is renowned all the world over for its odoriferous species and perfumed blossoms, the essences of which have been extracted by recondite methods for ages past. The sources, uses and preparation of these ancient drugs is a highly interesting historic study and would be out of place to discuss here. I referred to this aspect of the subject about two years ago in an article on 'The Perfumes of the Moghuls' (*Calcutta Review*, Oct., 1904.) On the present occasion it will be my aim to indicate the geographical and botanical sources of the chief commercial essential oils, review the present condition of the trade, and make a few practical suggestions in passing on the future possibilities of the industry.

Essential oils are distinguished by their strong and characteristic odours, and by being evaporated without decomposition and with little or no residue. The composition of essential oils is variable; many like turpentine oil consist of carbon and hydrogen only, others contain oxygen in addition. Their chemical constitution also differs in different cases, the majority being ethereal salts or compound ethers, aldehydes or phenols. Many essential oils consist of hydrocarbons or fluid bodies, mixed with solid oxidised compounds. When the latter are present in considerable amount a portion usually separates out in a crystalline form. In such cases the solid is often referred to as the *stearoptene* and the liquid is called the *elaeptene*. The essential oils are almost all of vegetable origin and exist in the flowers (as the rose), in the leaves (as the basil), in the rind of fruit (as the orange), and the fruits of the umbelliferæ (as the anise and ajwain).

The extraction of the oils is performed by the following methods, but in India the first only is that in general use.

1. Distillation of plants or parts of plants by boiling with water and condensing the steam. Notwithstanding that nearly all essential oils boil at a higher temperature than water their vapours escape with the vapour of water and collect in the distillate where they separate. Another modification of this method is to employ steam instead of a naked fire, this prevents the caking and burning of the solid matter at the bottom of the still.

2. The process of the sponge and the ecuelle. In the case of fruits of the orange tribe, in which the oil glands are large and numerous, a portion of the essence can be extracted without

distillation. For this purpose either a sponge, or a vessel like a cup with sharp points inside, is used for separating the oil from the peel.

3. Expression. In a few cases (orange, lemon, &c.) a part of the essential oil may be obtained by submitting the material to pressure.

4. Maceration in fat. This is to avoid as much as possible the application of heat. The flowers are macerated in vegetable tallow or paraffin, previously melted on a water-bath. The fat, charged with the essence, is afterwards shaken up with alcohol which removes the perfume.

5. Enfleurage or absorption is another process having the same object. Here layers of fat on glass frames are covered with flowers, and the flowers changed each day until the fat is sufficiently impregnated with the perfume.

For the purpose of illustrating the trade in Indian essential oils I have prepared a diagram showing the value of the exports for the past twenty-seven years. In 1879 the exports were valued at Rs. 1,20,439, they rose in 1902-3 to Rs. 7,70,872, and have remained at a high figure since then. On consulting the table it will be seen that there are two serious depressions, one occurring in 1896-97 and the other in 1900-01. It will be remembered that these periods coincided with two disastrous famines which were particularly felt in the Central Provinces, the region of the grass oil industry. The famine of 1896-97 affected the Khandesh district and naturally resulted in short supplies of the oil. In 1899-1900 the famine of the Central Provinces was worse in the Western provinces of Nimar and Betul. In Nimar the death rate reached the melancholy height of 105 per mile. The exceptional drought decimated the plants just at the season of distillation and for some months that year the Bombay dealers received no stocks. This scarcity not only affected the trade in India but also caused great inconvenience in the European markets, the price had to be raised, and the door was opened to smaller dealers to resort to adulteration. The monsoon that burst in July, immediately after the famine, was very heavy, and the young grass suffered in consequence, but in 1901 and 1902 the industry recovered itself as will be shown in the table. In studying the the essential oil industry in India where the 'occupation is chiefly in the open air one has thus to reckon with drought, floods, frost and other adverse climatic conditions which in certain seasons give the trade a 'set-back.'

After these general remarks on the Indian trade as a whole, I propose to refer to the various perfume plants which afford commercial oils and specify a few others which might be rendered to some account as trade articles in the future.

One of the most important essential oils in this country is East Indian geranium or palma rosa oil. It is known in the vernacular as *rusa-ka-tel*, and is referred to in ancient works on perfumes

and medicines. The oil is obtained from a grass—*Andropogon Schoenanthus*—or rusa grass, which is widely distributed in India. This grass is abundant in the North-east of the Bombay presidency, in Malwa, Merwara and Rajputana in Central India, and in the Central Provinces and Berar. The art of distilling the essential oil from the grass was probably commenced in Khandesh in the 18th century when this district was in a flourishing condition under its Muhammadan rulers. The original seat of the industry appears to have been at Pimpalnur, but as the oil became in greater request the manufacture spread to Nandurbar, Shahada and Taloda. The Nimar district in the Central Provinces has always been an important centre, so much so that the oil was for many years known commercially as 'Nimar Oil.' It was first brought to the notice of Europeans by Dr. Maxwell in 1825, and Mr. J. Forsyth, in 1827 was the first to make an inquiry into the industry. He found the grass in patches in the jungles throughout Nimar and the Nerbudda Valley, but in greater abundance along the foot of the Vindhyan range in the vicinity of Jaunghat, and 30 miles further west on the table land near Nalcha. The plant commences to flower at the end of August and continues to flower vigorously to October and November and during this time it gives sufficient oil to cover the expenses of its preparation. The distillation was conducted eighty years ago according to the same methods in use at the present day. The grass is boiled with water in wrought iron stills fitted over an earthen fireplace. From the still-head two straight tubes, from 5 to 6 feet long, conduct the vapours into two copper receivers immersed in cold water. The process occupies about six hours, and as four boilings are made in the 24 hours, a seer of oil can be obtained in that time. One of these stills will produce one and a half maunds or 80 quarts of oil during the season. We have no computation of the number of stills employed at the present time, but in 1879-80 there were 197 stills producing 71 cwts. of oil in West Khandesh and 100 of these were in Nandurbar alone.

Within the last few years there has been a considerable expansion of the industry in the Central Provinces and Berar. In the Forest Administration Report for 1896-97 the distillation was observed to be extending in Nimar district, and was carried on also in Hoshangabad, Betul, Mandla and Seoni. The forest revenue from the grass became an important consideration; in 1901-02 in the Betul district the receipts from leasing rusa grass *birs* went up from Rs. 1,325 to Rs. 7,332. Lately other districts have shown a revenue of over Rs. 10,000 per annum for leasing rusa grass lands.

In Berar the distillation is carried on in Ellichpur, Amraoti, Buldana, Basim and Wun. Jamod in Akola has been said to be celebrated for the industry. The oil prepared in various localities in Berar is brought to the chief market at Ellichpur town where it is brought up by dealers and exported to Bombay at Rs. 2 to

Rs. 4 per pound according to quality. The grass is everywhere very abundant, and the distillation requires only a moderate amount of skill and a small initial capital. The manufacturer is therefore well recompensed for his labour which is shown by the late increase in outturn and proved by experiments made by the Forest department in 1902-03.

There are two kinds of rusa grass oil obtained in the Central Provinces, one of a fine delicate odour and yellow colour called "Motia," and the other darker and more pungent called "Sophia." Ordinary rusa oil has for its principal constituent an alcohol boiling at 232°, named geraniol. The amount of this constituent varies from 76 to 93 per cent. Rusa oil is soluble in 3 or more parts of 70 per cent. alcohol. It was formerly adulterated with ground-nut oil, but as this is readily detected it was afterwards adulterated with kerosine and turpentine oil. The dealers have lately given up the suicidal policy of sophistication, and export the oil as it comes from the distillers. A very simple test for this and all other essential oils is to place a drop or two on a piece of white blotting paper and heat it. If volatile oils are present no stain will be left, but in the case of fixed oils, like ground-nut or castor, there will be a greasy stain. The only satisfactory method of testing an essential oil is to ascertain the boiling point, and to separate the constituents by fractional distillation, and separation of its alcohol by potassium sulphite, and other chemical methods.

Rusa grass oil was formerly designated Turkish geranium oil in the time when the oil entered the European market by way of Constantinople where it was used on a large scale for mixing with otto of roses. It is used by the Arabs and Turks in making hair oil, but it is most extensively employed in soap manufacture and perfumery.

Exports of Essential Oils (chiefly Rusa-grass oil) from Bombay,

	gallons.	Rs.
1896-97	... 8,199	1,49,553
1897-98	... 10,776	2,09,691
1898-99	... 16,000	4,04,140
1899-1900	... 10,400	2,78,005
1900-01	... 12,834	3,44,670
1901-02	... 19,641	6,10,783
1902-03	... 18,872	5,23,630
1903-04	... 20,680	5,38,774
1904-05	... 18,742	4,65,209
1905-06	... 23,436	5,51,425

These figures reveal a five-fold increase during the past forty years, for in 1866-67 we find that 41,643 lbs. (4,627 gals.) were shipped from Bombay to England and ports of the Red Sea. About ten years ago Egypt, the United Kingdom and Turkey in Europe were the principal consumers; at the present time, while Egypt is still absorbing one-third of the exports, Germany and France have become important buyers.

In former years, as we have shown, East Indian geranium oil always varied in composition and properties, it appeared to be made from a mixture of grasses and it was often adulterated with other oily products. Within recent years the situation has changed and an excellent oil at moderate prices is in the market. It has acquired a distinct reputation in the perfumery industry and is considered a good material for scenting soaps.

From a commercial point of view a critical stage has been reached. The production of the oil has grown in an unprecedented manner and large parcels of good and medium oil are being regularly thrown on the market. The price last year had never before reached such a low quotation and large supplies this year are threatening still further to depress its value. In consequence of these favourable conditions to purchasers on the Continent, the manufacture of geraniol on a large scale has been taken up and this added to its cheapness will cause other outlets to be invented for its use as a natural or artificial perfume.

Besides India, Europe receives fair quantities of geranium oil from Algeria and Reunion, and the Spanish oil in point of quality is not approached by any other kind. The production in Algeria is estimated at 270 cwt., and at least 1,250 acres of grass are under cultivation. From Reunion the average exports of oil have been 250 cwts. Notwithstanding this competition India in the matter of quantity is far in advance of any other country in the production of this perfume.

Lemon-grass oil is another grass oil derived from a species of *Andropogon* usually referred to as *A. citratus*. Although allied to rusa grass oil in its botanical origin, it is totally distinct in its chemical composition. Lemon grass oil, as its name signifies, has a lemon-like odour and taste. It is a yellowish or reddish liquid of sp. gr. 0.899 and 0.903. It is readily soluble in 2 pts. of alcohol of 70 per cent. The chief constituent is an aldehyde, citral boiling at 228°, which occurs in the oil to the extent of 70 to 75 per cent. Citral is also found in lemon peel, the leaves of the true verbenas of Spain, and in other lemon-smelling plants.

Lemon grass oil is prepared in Southern India, and the industry is more modern than that of rusa oil. I can find no earlier record than its importation into England in 1832. For many years it has been prepared on the western slopes of Travancore north of Anjengo as far as Cochin, where the grass can be obtained sufficiently green and fresh for about six months in the year. In this region the Malayalis distil the grass in copper stills with an earthen dome and the condenser consists of a copper tube passing through a tall wooden bucket. Each boiling yields a quart of oil worth about Rs. 3 in the bazar. In the eastern part of the Travancore State the Tamils use a round copper boiler contracted into a neck at the top and about four feet high. The top is covered with a specially prepared earthen vessel which communicates with a copper tube about three inches in diameter which

passes through a condenser filled with cold water to a receiving vessel. When the still is charged with grass, all the joints are made air tight by luting with rags and clay. Distillation is continued for twenty-four hours when about a pint of oil is obtained. The stills are moved about from place to place according to the abundance of the grass, and in the cold weather may be seen dotted over the landscape. In February the grass becomes coarse and is burnt. The industry and the profits were formerly in the hands of natives and operations were carried on with grass growing wild in the jungles. Gradually the wild grass of the two States of Travancore and Cochin was insufficient to supply the increasing demand for the oil from Europe. The distillers of Cochin then began to exploit Malabar where the grass was not known to have any economic value. The owners of the land on account of the new use of the grass enjoyed the benefit of seeing it rise to fourteen times its former value. Planters have commenced distillation in the Ernad and Walluvanad taluqs, in the Wynaad, and Venieri in Pudukuti. These hilly regions are covered entirely with lemon grass which is sold at a nominal sum, but the question of specially cultivating the grass for oil in suitable lands is now being considered. It has been said that the new industry will provide an outlet for the energies of the Moplahs whose fanaticism is so well known and perhaps may be traced, to the straitened circumstances of their existence. In 1903 there were eleven stills at work at Walluvanad, most of them being controlled by Moplahs. The stills used here are more modern in construction than those used in the south, and are made locally at a cost of between Rs. 200 and Rs. 300 each. The copper boiler is six feet high and twelve feet in circumference. From the head of the still a pipe conducts the steam through a condensing tub filled with cold water and the oil is collected into the vessels used as receivers. An ordinary grass-cutter is paid two annas a head-load for the lemon grass, and sixteen of these bundles are sufficient to fill a boiler, which after distillation yield one bottle of oil. The best oil before it is bottled is always filtered through paper. When Travancore held the monopoly of the industry, the oil was exported from Cochin, but now that the industry has extended northwards into Malabar, Calicut is becoming a centre of distribution.

Lemon grass oil is exported in reputed quart bottles each of which is guaranteed to contain 23 ounces. One dozen of these bottles make a case. The exports from Cochin have risen from 228 cases in 1884 to 2,387 cases in 1889 and 1,917 cases in 1890. At the present time from 2,000 to 3,000 cases are exported annually from Cochin to Bombay and to various foreign ports, chiefly New York, Hamburg and London.

The following are the exports of essential oils, chiefly lemon grass oil, from Madras during the past ten years :—

		gallons.	Rs.
1896-97	...	5,324	79,081
1897-98	...	6,292	1,33,775
1898-99	...	4,278	89,745
1899-1900	...	6,280	1,29,701
1901-02	...	589	27,376
1902-03	...	6,258	2,42,319
1903-04	...	3,889	1,60,505
1904-05	...	2,721	1,41,489
1905-06	...	2,675	1,54,141

A large proportion of the oil is absorbed for the manufacture of citral, and ionone—an artificial violet perfume. On this account within the last three years the price has quadrupled. These prices must have proved very favourable to the distillers and traders of the Western Coast, but on the other hand fresh sources of supply have appeared which may compete with the present monopoly. An export trade in the oil has recently developed in Java. It is also brought in small quantities from Singapore and Ceylon, and experimental batches have been sent from Tonkin, San Thome in Portuguese, West Africa, Brazil, and Monserrat in the West Indies. Messrs. Schimmel & Co., certify that the Brazilian and West Indian oils are unable to compete with the East Indian oil on account of their insolubility in alcohol. The demand for lemon grass oil is steadily on the increase in England and the Continent, and all things being considered there is a very successful future for its manufacture in India.

Citronella oil, although prepared chiefly in Ceylon, should be referred to in dealing with grass oils. This oil is distilled from *Andropogon Nardus*, a grass cultivated on the slopes of the hills in the Southern Province of Ceylon, and according to statistics as much as 40,000 to 50,000 acres are under cultivation. The first and principal harvesting period is in July and August, and the second lasts from December until February. The average yield is from 16 to 20 bottles of oil per acre for the summer and from 5 to 10 bottles for the winter season. The stills, of which there are 600, are modern, and the success of the natives who constitute the majority of the producers is remarkable. There has been an enormous increase in production and consumption of citronella oil in Ceylon, which is shown by the exports reaching in 1899 one and a half million pounds in weight. Since this date exports have declined.

The oil contains citronellal and geraniol; it is occasionally adulterated with fatty oils, petroleum, resin spirit, acetone, and alcohol. It is much cheaper than lemon grass oil and it is sometimes used for the purpose of adulterating the latter.

Leaving the grass oils which are the chief Indian essential oils that are exported in large quantities we will consider some of the essences and perfumes which are made and used to a

considerable extent in the country. Sandal wood is one of the most important perfumes in the East, as it is one of the most fashionable in the West and is mainly derived from the province of Mysore where the trees are protected by the state. The annual auction sales of the wood from the roots and stems brings in an annual revenue of five or six lakhs of rupees. The wood is sold in grades varying from Rs. 500 per ton for selected logs to Rs. 85 per ton for fixed chips. The wood is purchased by Muhammadans in Bombay, whose agents attend the Mysore auctions, and is shipped to Europe, *via* Tellichery or Bombay.

The Mysore Government has long had establishments for extracting the oil which is sent to China and Arabia. The oil is procured from the wood by distillation, the roots yielding the largest quantity and finest quality. The yield of the oil is at the rate of 10 ozs. per maund or 2.5 per cent., and the process lasts several days. The average price of the oil in India is Rs. 8 per pound. Two or three private firms have also established stills, but the oil is said not to compare in properties with that made by European distillers. While it appears desirable from a commercial aspect to prepare the oil in the country that produces the raw material the indigenous stills are not at present capable of dealing with large quantities. At the factory of Messrs Schimmel & Co., Leipzig, special appliances are used for comminuting the wood, and their stills are constructed for producing daily four cwts. of oil, with an average yield of 3.3 per cent.

In 1902 it was reported from Mysore that the spike disease has appeared in the sandalwood plantations which was threatening the trees with destruction. The disease had first been observed in Coorg in 1900. There has naturally been an upward movement in the price of the oil in spite of the large quantity of wood sold at the auctions owing to the numbers of trees cut down at Hunsur, Chikmagalur, Seringapatam and Coorg which showed traces of the disease. Unfortunately no successful remedy has at present been found for the disease; and the future does not look hopeful. A decline in supplies of sandal wood is predicted, as the young trees are particularly subject to the disease, and the growth of new plantations is not at present calculated to keep pace with the consumption.

These remarks on the ancient and favourite perfume of sandal wood oil will appropriately introduce the subject of attars or ottos, of which rose otto is the most important. In former Moghul times sandal oil was generally used as the basis in preparing all ottos. Col. Phillott, an authority in Persian and Urdu literature, has drawn my attention to an old work published in Lahore, describing the preparation of otto of roses. The copper alembic and condensing appliances are carefully detailed, the former is charged with rose petals and water, but

before heat is applied a small quantity of sandal oil is to be placed in the receiver with the object of "drawing over" 'the rose essence.' " Each time the otto is prepared sandal wood oil must be placed in the receiving vessel." The resulting essence was no doubt an agreeable perfume, but in modern times it is more satisfactory to obtain the pure essential oils first, and then blend them in known proportions afterwards.

Rosewater is manufactured in Bengal and the Panjab, but a large quantity is imported from Persia. For over two centuries rose water and otto have been made in Ghazipur on the banks of the Ganges from the damask rose (*Rosa damascena*). The oil distilled there, however, is never pure, being adulterated with other oils. One hundred lbs. of rose leaves or one hundred thousand roses are estimated to produce three drachms or 180 grains of otto and 100 bottles of rosewater. Rosewater to the extent of 20,000 to 30,000 gallons annually is imported into Bombay from Persian Gulf. Two qualities are met with—Yak-atishi (once distilled) and Du-atishi (twice distilled). Its value is Rs. 4 to Rs. $4\frac{1}{2}$ for a carboy of 20 lbs.

Turpentine oil—the essential oil distilled from the turpentine or oleo-resin of the Chil Pine (*Pinus longifolia*) is prepared by the Forest Department in Northern India. Factories are established at Dehra Dun, Naini Tal, and Nurpur in Kangra. These centres are capable of producing about 20,000 gallons of turpentine oil a year. The whole of this output is consumed in the country being used in the Medical Stores, Military Department, by several railway companies, and by paint and varnish manufacturers. Samples of the oil have been sent to England, and have been favourably reported upon by such eminent authorities as Professor Armstrong and Sir Boverton Redwood.

Eucalyptus or Blue gum oil is now an established industry on the Nilgiri Hills. The blue gum plantations were commenced about sixty years ago, and the wood has been used principally as fuel. About twenty years ago the oil was first distilled from the leaves in the Botanical Gardens, Ootacamund. At the time of the influenza epidemic in 1891, the manufacture was taken up by Mr. Wallace, and the oil was readily bought locally and by the Medical Stores depôt in Madras. Lately other stills have been erected at Lovedale and Coonoor and the produce finds an appreciative market.

Camphor is a concrete essential oil largely used in India, and in recent years a great deal has been written regarding the cultivation of the tree in India and Ceylon. It is well known that the camphor of commerce is largely manufactured in Central China, Formosa and Japan, and is one of those articles subject to monopoly and consequently to advancing values. It has been considered a suitable tree for cultivation in this country, but the prospect of waiting fifty to a hundred

years for trees to reach a mature enough condition to yield camphor has deterred many from speculating in the enterprise. It has also been suggested that camphor might be made from the leaves of comparatively young trees, but as I pointed out ten years ago there is a small yield of oil in the leaves and the amount of camphor is very variable. Experiments must be made in this direction on a larger scale before definite opinions can be expressed.

Ajwain or ajowan (the seeds of *Carum copticum*) is largely used in medicine, and the oil and water are prepared nearly all over India. The *aik* or distilled water, called *omum* water in South India, is a favourite domestic remedy replacing the well-known dill water of Europe. The oil by spontaneous evaporation at a low temperature yields a crystalline substance or stearoptene known under the name of *Ajowan ke phul*. This substance is identical with thymol, contained in the Western herb, *Thymus vulgaris*. Crude thymol manufactured in Central India has an average value of Rs. 8 per lb. There are other plants of the umbelliferous order the fruits of which might be conveniently distilled and the oil exported.

Winter-green oil is largely consumed in America on account of its aromatic and medicinal properties. Its special value resides in the fact that it consists chemically of a compound of salicylic acid, and is a strong antiseptic. One or two drops placed in a bottle of ink or gum used on the office table will prevent the formation of mould. An Indian Winter-green (*Gaultheria fragrantissima*) grows on the Nilgiris and other mountains in Southern India and its essential oil is easily prepared by using an ordinary copper still.

Dipterocarpus oil (Gurjan balsam or wood oil) is obtained from various species of *Dipterocarpus* growing in Assam and Burma. The balsam or oleo resin consists of a resin acid, gurgunic acid, and an essential oil. The oil is becoming more and more important for the trade owing to its industrial and medicinal applications.

I would now enumerate a few indigenous performs which are often asked for by English and Continental dealers. These relate specially to delicate scents which of necessity must be made from fresh flowers and plants since the raw articles rapidly deteriorate. The preparation of these oils is thrown out as a suggestion to those who have a small capital and who would be sufficiently enterprising to make experiments.

The essence of Champaca or Champa from the flowers of *Michelia Champaca* is always wanted in perfumery. The small supplies in Europe of this oil are continually being exhausted. The blossoms must be gathered singly just as they expand and must be distilled at once or submitted to the process of enfleurage. No way has yet been devised of otherwise preserving them from rapid decay. Where these trees occur in any abun-

dance a profitable harvest of the aromatic principle could be easily obtained.

Keora essence is another perfume much sought after by European distillers. The flowers have a most delicate scent, but samples of oil placed on the market are usually obtained by steeping the blossoms in sesame oil which destroys all the honey-like characters of the true odour. The keora known by the English name of Screw pine and by botanists as *Pandanus odoratissimus* is a native of India, Persia, and Arabia, and occurs frequently along the Western Coast.

Cassie flowers obtained from *Acacia Farnesiana* yield an excellent perfume for which there is always a demand. The oil consists of a methyl ester of salicylic acid. The tree is wild in most parts of Bengal and the Punjab, and the yellow flower heads perfume the atmosphere very pleasantly. When the plants are cultivated a tree yields 2 lbs. of flowers valued at three to four pence a pound; an acre thus realising £30 to £40.

At Cannes in the South of France cassie pomade is made by the process of infusion. This consists in infusing the substance in a mixture of lard and beef fat in a water-bath. Two pounds of the flowers are immersed entire in one pound of fat; after immersion in the fatty menstruum for the requisite period the mixture is strained off and the residue pressed. The pomade is preserved in large metal vessels. In India the animal fat may be substituted by petroleum wax or the concrete oil of *Vateria indica*, the Piney tallow of Malabar, or kokam butter—the natural fat of the seeds of *Garcinia indica*.

About fifteen years ago a large consignment of Indian made cassie pomade was shipped to London and was found to be superior to that grown at Grasse in France. This opinion was confirmed by the eminent firm of Messrs. Schimmel & Co. It is to be regretted that this promising trade was abandoned owing to the death of the gentlemen who made this perfume in Naini Tal but it is hoped that this reference to the excellence of Indian cassie pomade will resuscitate its manufacture.

Patchouli oil is an absolute necessity for perfumery. The true patchouli is prepared from a labiate plant, the *Pogostemon Patchouli*, a native of Malaya and Indo-China. But there are various species of *Pogostemon* in Western India which are marked by their strong perfume and would doubtless yield essential oils if submitted to distillation.

The following list of raw materials for the manufacture of perfumes in India might be added to the more important ones I have been considering:—

Mesua fenea, flowers. Nagkesur.

Ochrocarpus longifolius, flowers. Lal-nagkesur.

Ruta graveolens, herb. Rue, Sudáb.

Zanthoscyllum sp., fruits. Pepper flower.

Toddalia aculeata, leaves. Milakaranai.

Munaya Koenigi, leaves. Curry leaf tree.
Citrus sp. Fruits and leaves. Oranges and lemons.
Ocotea Marmelos, leaves. B  l
Feronia elephantum, leaves. Wood apple.
Hardwickea pinnata, oleo-resin. Yenne.
Prunus armenica, seeds. Rubani.
Prunus insititia, seeds. Alu-bokhara.
Altemeria excelsa, balsam. Nantayok.
Myrtus communis, leaves and fruit. Myrtle.
Carum carvi, fruits. Sujah-jira, caraway.
Foeniculum vulgare, fruits. Fennel.
Pencedanum graveolens fruits. Dill.
Aralia Pseudo-ginseng root Indian Ginseng.
Nardostachys Jatamansi, root. Spikenard.
Blumea balsamifera, plant. Ngai.
Sph  ranthus indicus, flowers. Mundi.
Achillea Millefolium, plant. Biranjasit.
Spilunthes Acmella, flower heads. Pipulka.
Artemisia vulgaris, herb. Wormwood.
Sansurea Lappa, root. Kut Paehak.
Mimusops Elengi, flowers. Maulsiri.
Nyctanthes arbor-tristis, flowers. Night Jasmine.
Jasminum grandiflorum, flowers. Jasmine.
Plumeria acutifolia flowers. Khair-champa
Ipom  ea sinuata, leaves. Noyeau plant.
Vitex Negundo, leaves. Nisinda.
Vitex tripartita, leaves.
Ocimum basilicum, herb. Sweet basil.
Ocimum sanctum, herb. Holy basil.
Ocimum gratissimum, herb. Ram-tulsi.
Lavandula stoechas, herb. Arabian lavender.
Mentha sylvestris, herb. Wild mint
Origanum marjorana, herb. Marwa, marjoram.
Thymus serpyllum, herb. Wild Thyme, masho.
Piper Betle, leaves. Pan.
Cinnamomum sp. bark and leaves. Indian cinnamon.
Lits  a polyalthia, leaves.
Aquilaria Agallocha, wood. Agar, eagle wood.
Salix Caprea, flowers. Bedmishk.
Juniperus communis, fruit. Juniper berries.
Cedrus libani, wood, oleo-resin. Deodar.
K  mpferia Galanga, tubers. Chandra mula.
Hedyotis spicata, tubers. Kapur-Kachri.
Alpinia Galanga, root. Greater galangal.
Homalomena aromatica, root. Gondo matri.
Calamus, Sweet flag.
Nigella Arvensis, Seeds. Black cummin.
Abelmoschus moschiferus, Seeds. Ambrette.
Cassia Tetraptera, of the laurel tribe.

THE EFFECT OF IMPORT DUTIES ON INDUSTRIAL DEVELOPMENT.

BY SIR GUILFORD MOLESWORTH, K.C.I.E.

In a paper read before the Benares Industrial Conference on the "Industrial Development of India" in 1905, I drew attention to the manner in which the Industrial interests of India had been sacrificed to the English Fiscal Policy, and I advocated the adoption of a policy of moderate and carefully considered import duties to relieve the dead weight of taxation from the land and to prevent the crushing of India's industries, by unfair and unrestricted foreign competition.

I regret that more attention was not devoted to this subject by Members of the Conference, because I am convinced that unless some such policy be adopted it will be impossible to develop the vast industrial resources of India. It is difficult to exaggerate the importance of this question. I was glad to see that Mr. Dutt in his Presidential address said :—

"We will not see our country made a land of raw produce or a dumping ground for the manufactures of all nations."

The Swadeshi movement is a step in the right direction, but I fear it will prove a failure unless it is backed up by a policy of fiscal reform. It must necessarily be limited in action, confined as it will be to a comparatively small number of the educated and patriotic classes of India, but it cannot reach the masses and consequently can produce no practical results unless combined with the policy of import duty.

In my previous paper I have already alluded to the causes which have given an undue prestige to the fiscal policy prevailing in Great Britain for which the term "Free Trade" is a misnomer. I have also briefly alluded to the fact that British industrial supremacy was established under a policy of strict protection. Under that policy she developed her manufactures and had a complete monopoly of them. She had control of all the markets of the world, and became greatest capitalist nation. Alison in his "History of Europe" wrote :—

"There is perhaps no example in the annals of mankind of a nation having made such advances in industry, wealth and numbers, as Great Britain has made since the peace. In the 30 years that have elapsed since the Battle of Waterloo, during which it has enjoyed in Europe at least almost uninterrupted peace, its population has increased more than one-half, having advanced from 18,500,000 to 28,000,000. Its imports have doubled, having risen from £32,000,000 to 70,000,000 its exports have more than tripled, having swelled from £42,000,000 to £130,000,000, exclusive of Colonial produce, its shipping has doubled, having

grown from 2,500,000 to 5,000,000 tons.....During the same period the agricultural industry of the country has been so far from falling short of this prodigious increase in its commercial transactions that it has signally prospered. The dependence of the nation on foreign supplies has steadily diminished until the grain annually imported had come (on an average of 5 years ending with 1835) to be no more than a *200th part in average years of the annual consumption*, and the prodigy was exhibited of a rural industry in an old state, possessing a narrow and long cultivated territory, not only keeping pace with but outstripping an increase of numbers and augmentation of food required for the purpose of luxury unparalleled in any age." Alison "History of Europe," Chap. XCV. 66.

It should be noted that during this period the British trade was in a far more healthy character than at present, for at the end of this period in 1846 we had a *favourable* balance of trade amounting to £66,000,000, whereas we have now an *adverse* balance of £180,000,000. It must also be remembered that during this period there were but few railways and scarcely any steam navigation. It was only at the end of this period that the great railway mania set in.

It was about 1835 that an extraordinary era of prosperity sprang up throughout the whole civilised world tending to an enormous increase in the wealth of the world. This was due to numerous improvements in arts, sciences and inventions, as well as to improved communications by railways, steam navigation and telegraphs, which made such rapid strides during the second quarter of the 19th century. England was the great pioneer in these improvements, then came the great rush of gold from California and Australia causing an expansion of the currency of the world, a condition which is always accompanied by increased activity of trade. Foreign nations shared this prosperity as well as ourselves, but England was in a better position than any other nation to reap the advantages of this altered condition of affairs. As already stated she had the markets of the world in her hands, she had developed her coal, her iron and her textile industries under the policy of strict protection; and had complete monopoly of them. She not only supplied manufactures and machinery for the whole world, but as the great capitalist nation she furnished funds for every public work abroad with the understanding that plant of every description should be supplied from England. The value of her investments increased enormously with the rapid development of the countries in which they had been invested, and she has been enabled constantly to reinvest the produce of these investments, so that her wealth as a capitalist has become enormous and must now amount to many thousand millions sterling.

The English people, generally satisfied with this rush of prosperity and wealth, accepted without enquiry the persistent

claims of the advocates of Free Trade for this result, and this idea has been so thoroughly engrained into the English mind that those who venture to question it have been thought to be men beyond the reach of argument, and policy of Free Trade has become a sort of fetish or religion not to be questioned.

The year 1846, in which our present Fiscal policy was adopted opened auspiciously. In January 1846 the Queen's speech assured Parliament of:—

“The prosperous state of the realm, the increased demand for labour and the general improvement that had taken place in the internal condition of the country.”

Shortly afterwards the leading bankers and merchants of the City of London thought it right to state:—

“For the information of Parliament that the commercial and manufacturing interests had been for some time in a state of great activity and prosperity.”

The month of May in the same year witnessed the passing of the Act which formed the first step in our Free Trade policy. In vain it was urged that it would throw land out of cultivation, that it would involve dangerous dependence on foreign supplies, and heavy taxation on England's industries, as well as ruinous competition. For many years England did not feel the blighting effects of Free Trade. She had a good start in the race and it would naturally take years for other nations to overtake her but the capital which she recklessly expended in purchasing abroad commodities which might have been produced at home, gradually armed other nations with funds for successful competition with her. It was not until after 20 or 25 years that the effects of her policy began to be felt. The situation had to some extent been saved by the partial restriction of unlimited free imports in consequence of the Crimean and the American Civil war. Our agriculture being more heavily burdened than any other industry was the first to suffer and has been practically ruined, millions of acres having gone out of cultivation, lapsed into weedy pasture and large number of our manufacturing industries have been crushed out by unlimited foreign competition.

Mr. Carnegie in a speech at St. Andrew's has declared that the United States, under a policy of strict protection, has now taken the foremost place in wealth, production, and exports. Germany under a similar policy is rapidly overtaking us, and Mr. Carnegie thought that before long Russia would press us hardly, and this probably would have been the case but for her War with Japan and her internal troubles.

But what is the cause of this loss of industrial and commercial supremacy? It is simply due to our own folly in failing to foster a reciprocal trade with India and our Colonies. The British Empire has a huge area of 12,000,000 sq. miles, comprising enormous, but undeveloped, wealth, whether mineral or agricultural. It has climates of every gradation from the cold to

the tropical, capable of providing every variety of produce. It has population of nearly 400,000,000 and labour of every description, in many parts absurdly cheap. If it had been properly fostered it ought to have furnished a magnificent market, which would have rendered us independent of foreign trade and enabled us to have surpassed the United States in a greater measure than that in which she is now surpassing us. The undeveloped state of our Empire is a disgrace to Great Britain, we have not merely failed to foster its resources, but on the contrary we have handicapped our subjects in every way and allowed the foreigner advantages which our own subjects do not possess. The foreigner who uses our own Colonies and Dependencies as freely as our own subjects, contributes nothing to the cost of our Home Government or the Army and Navy which protects his interests, if he has not a domicile in England; yet he reaps all the advantages of an English farm while he evades the heavy taxes and burdens which the British subjects have to pay. It is absurd to suppose that such an unequal competition can be maintained. After securing new markets at great cost in blood and treasure, we foolishly allow any foreigner to reap the benefit at our expense and to our detriment. We now expend more than £400,000,000 a year in purchasing from the foreigner much which under a wise policy might have been supplied within our own Empire and in doing so the money is not only lost to our own subjects but it is mischievously employed in furnishing the foreigner with capital for successful competition with us, and while we admit the manufactures and products of foreign nations free of import duty, they close their doors to us with heavy tariffs.

The time has now arrived when we must decide whether we shall maintain our vast Empire or allow its gradual disintegration. Our Colonies have expressed a desire to enter into reciprocal relations with us on basis of preferential treatment, which would be mutually advantageous, but up to the present time their advances have been treated with contempt. Shall we foster its industries and develop its enormous resources, or shall we allow the slow process of neglect to complete the work of commercial disintegration and ruin? Shall we again neglect the plain teaching of history and repeat that gigantic folly, by which we lost our American Colonies, which with all her wealth ought to have been ours but for our short-sighted policy in the criminal neglect of their interest and our own?

The incidence of taxation is one of the most difficult problems in Political Economy. It has been assumed by many of the followers of Cobden that a tariff must necessarily raise the prices of the articles taxed. To shallow thinkers the paradox of prices falling after the imposition of the import duty is incomprehensible, but to those who have carefully studied the matter, it is evident that there are other factors in the problem which may act *indirectly* in counteracting the *direct* tendency of the tax. No doubt in

some cases the imposition of a tariff does increase the price, but experience proves, as will be shewn hereafter, that in the majority of cases it does not have that effect. Some times it raises the price temporarily with the result that it falls again, sometimes it has immediate effect in lowering prices by destroying a foreign monopoly or stimulating the development of a home industry, sometimes it happens that the anticipation of a tariff causes a fall of price, because the foreign producer, knowing that the tax will come from his own profits pushes through his surplus stock at a sacrifice so as to save the tax before the tariff law can come into operation. This was especially the case before the MacKinley Act came into effect.

It may perhaps be laid down as a general axiom, subject of course to modifying influences, that when an article is or can be produced at home a tariff, if it be not prohibitive stimulates production, and does not raise the price, the tax being paid by the foreign producer, but when an article is not of home production, such as tea, coffee, cocoa, tobacco, wines, etc., the tariff increases the price and the tax falls on the consumer. The practical effect of English Fiscal policy is, that we admit free of duty those articles which compete with our own industries and tax those articles which do not. We remit the tax which should be paid by the foreign producer, whilst we exact that which falls upon our own subjects.

In the year 1896, Mr. A. Williamson, being convinced that the duty, on any article which had to encounter competition of a home product fell upon the foreign producer and not upon the consumer, challenged the Cobden Club, in order to test this question, to issue a short circular to the chief exporters of Great Britain asking their experience. As the challenge was declined, Mr. Williamson set a circular to a large number of representative exporters of our chief manufacturing centres embracing cotton, woollen, carpet, iron and steel, brass, gold, silver, electro-plate, hardware, guns, cycles, engineering, glass, India rubber and other industries. Out of 531 replies 530 admitted that the *incidents of taxation fell upon them and not upon the consumer*. The only dissenting reply was from an American Cycle exporter, who had recently opened business in Conventry.

(A few examples, proving that the imposition of tariff does not necessarily raise prices are given in Appendix No. 1).

In no case is the proverb "Fallacies die hard" more strongly exemplified than in the case of that mischievous and dishonest appeal to the ignorance of the masses, the electioneering cry of "Taxing the poor man's bread." In many letters discussing Mr. Chamberlain's proposals regarding the trade of the Empire, it is too often assumed that a tax on wheat must necessarily increase the cost of bread. Now this is absolutely contrary to facts and past experience.

The price of wheat is generally regulated by that which may

be termed the "World's level of prices"—a level which is due to the general conditions of exchange, currency, transport and production. Tariffs in their *direct* action have but little influence on prices *unless they are almost prohibitory*. Under a well regulated system of Import Duties, there is an action tending towards the equalisation of prices in different countries; and this is maintained by constant telegraphic communication of brokers with the principal markets of the world. A few examples will suffice. The Committee of the Belgian House of Representatives in their report of 1886 stated that, on several occasions on which Import Duties were imposed upon wheat, the price thereafter fell, and when the duty was abolished it rose except in one instance. Again in a Consular report, dated 14th of May 1883, Sir E. Malet wrote :—

"Eight years' experience has shewn that the higher duties introduced in 1879 have been attended with the most successful results fiscally.....They failed to raise the price of wheat, prices had fallen instead of rising."

Again Mr. Vansittart, Consul at Wurtemberg, reported in 1818 :—

"Since the addition of the duties all kinds of grain were cheaper than ever."

In 1888 the duty on wheat in Italy was raised from 1 franc per quintal to 4 francs, or about 7/6 per quarter. Practically it may be said that the price of bread remained almost unchanged, the tendency having been rather to a fall than a rise in price, although large imports of foreign wheat poured into Italy. Similar results ensued in Germany in 1892 when the duty was raised 400 per cent. and the price of wheat fell 9 per cent. Also in France in 1895 when the duty was raised, the price of bread fell 7 per cent. In all these cases it is evident the burden of taxation fell upon the foreign producer, not on the consumer. In the Colony of Victoria in 1888, under an Import Duty of 9/6 per qr. on wheat, bread was cheaper than in New South Wales which admitted wheat duty free, the reason being that the Victorian farmer was protected from an undue influx of foreign surplus, and was consequently able, not only to grow wheat with confidence but owing to the reduction of other taxation, caused by the revenue derived from foreign imports, he was in a position to grow wheat at a cheaper rate. The internal competition was thereby stimulated to an extent which tended to a fall rather than a rise in price.

Of course if a duty be prohibitive (as was the case in which France imposed a duty of more 12/- a qr. on wheat when the outside world's price was as low as 27/-,) the price must necessarily rise in times when the home crop happens to be scanty.

The development of the Tin plate industry in the United States affords a valuable example of the manner in which an industry may be developed by the policy which I have advocated. Before 1891 there was an import duty of 1 cent per lb. on Tin

plates. This was found to be insufficient to develop the industry ; as the British manufacturers dumped down, in the United States, their surplus plates, and ruined the struggling industry. It was therefore determined to increase the duty. President McKinley in reply to the Free Trader's argument, said :—

“They insist that we cannot make tin plates ; so they said about steel rails, so they said about plate glass, and cutlery and pottery.”

All these industries and many others had been developed by the means of import duties. The duty was therefore raised from 1 cent to 2.2 cents per lb. This, according to a Free Trader's contention should have raised the price of tin plates in the United States from 3 to 4.2 cents., but on the contrary, as the industry developed the price fell from 3 to 2.2 cents. in 1898, and the development of the tin plate industry has been a complete success. The production of tin plates in the United States has increased from 1,000 tons in 1891 (the year in which the McKinley Act took effect) to 4,12,000 tons in 1902. During this period the value of imported tin plates amounted to 1,492,000 dollars paying duty, but subject to a drawback of 99 per cent. if exported in a manufactured form.

The United States Census of 1900 shows that there has been an increase of 104 per cent. in the number of fruit and vegetable canning establishments since 1890—an increase of 73 per cent. in the amount of wages paid in the same industry, 101 per cent. increase in the cost of fruit and vegetables canned, and 89 per cent. increase in the value of the completed product. The average cost of tin plates for 11 years after the McKinley Tariff was imposed has been 2.65 as against 3 cents. per lb. in the years 1890-91. When the tariff was first imposed the cost of tin plates, instead of rising, steadily fell, although there was a large import the foreigner paying duty. The great development of the canning industry and the consequent demand for tin plates has tended to a temporary rise in the prices, and this was increased by the great coal strike, as well as by the strike in tin plate operatives who obtained a rise in their wages ; but the average price of 1902 was not higher than in 1891.

Now to sum up the results :—

- (1) The industry of Canning fruit and vegetables has largely increased.
- (2) The amount paid in wages has also increased.
- (3) The amount of fruit and vegetables used for canning has increased.
- (4) The tin plate industry has been successfully developed and the Welsh monopoly broken up.
- (5) Capital has been largely attracted to the United States.
- (6) There has been a large increase to the revenue from duty.

- (7) The cost of the tin plates has been reduced to the consumer.
- (8) The wages of the tin plate operatives have been raised.
- (9) The payment which formerly went abroad for tin plates now circulates through the wage earners amongst retail traders and gives additional employment to the industries allied to the Tin plate industry, such as the chemical, iron, mining and others.

Sir Lyon Playfair, the Champion of the Cobden Club, was right when he said in condemnation of the McKinley Act :—

"If the Americans be right in principle and if they be successful in practice, the whole of the policy of the United Kingdom is founded on a gigantic error and must lead to our ruin as a commercial nation."

The McKinley Act has proved to have been successful beyond all anticipation, even of its most sanguine supporters.

The following incident furnishes an example of the effects of dumping on a struggling industry. In 1846 when the United States were struggling to develop their iron industry, iron rails were sold in the United States for 50 dollars a ton under import duties, but as soon as the tariff was removed, the British manufacturers dumped on the United States market rails at 40 dollars a ton and then, having ruined the struggling industry, raised the price to 70 dollars.

The history of the United States proves that there have been several periods during which, under the influence of economic charlatans, the Government has relaxed its policy of protection. Such periods have been marked by depression of trade and distress, whilst the periods of strict protection have been marked by activity of trade and general prosperity. For details of this, see Appendix No. 2.

None of the prophecies of the originators of the policy of Free Trade have been realised. In 1844 Cobden prophesied :—

"In ten years from the time when England inaugurates the glorious era of commercial freedom, every country will be Free Traders to the back-bone"

Again he prophesied in 1846 :—

"There will not be a tariff in Europe that will not be changed in less than 5 years to follow your example."

More than half a century has elapsed and Free Trade is either an English or a savage custom. Not a single civilized country, except Denmark, has followed our example, but in most countries tariffs are increasing in intensity. Again in 1844 he prophesied that agriculture would flourish under Free Trade, and no interest would receive so much benefit from the Repeal of the Corn Laws as the farm tenant interest. But our agriculture has been ruined, millions of acres have gone out of cultivation,

and both farm tenants and landholders have lost their capital. Property has been constantly changing hands, and freeholds are heavily mortgaged.

I have already pointed out that the British Fiscal Policy of unrestricted foreign imports, though claimed by free traders to be based on the political economy of Adam Smith, is absolutely opposed to it. Adam Smith, in his "Wealth of Nations," rightly directed much argument against "monopolies," "absolute prohibitions," and "high duties" which amounted to a prohibition. He only advocated the free import of foreign corn on the assumption that it would be so small that it "could affect very little the interests of the farmers of Great Britain." Of course he could not have foreseen that steam navigation and railways, which did not exist in his days, would entirely change the conditions of import, and would enable the actual import of foreign corn to be more than two thousand times as great as the quantity on which he based his assumption. He actually predicted the ruin, which has already befallen many of the British manufactures, in the following terms:—

"If the free importation of foreign manufactures were permitted several home manufactures would probably suffer, and some of them perhaps go to ruin altogether."

Both he and Mill advocated the imposition of countervailing duties on those foreign nations which restricted, by high duties or prohibition, the importation of produce into their countries. (See Appendix 3).

In conclusion, I would recommend to the Provincial Committees of the Industrial Conference a careful study of "Facts for Fiscal Reformers," which I compiled four years ago for the information of the working men's Tariff Reform League of Birmingham; (See Appendix 4), and I would suggest that the following resolution be submitted for the consideration of the next Industrial Conference.

Resolution.

Resolved.—That this Conference urges on the Government of India:—(1) To inaugurate a carefully considered policy of moderate import duties, which will not only yield a revenue that will relieve the land of the dead weight of taxation, but will also protect the industries of India from unfair and unrestricted foreign competition. (2) To foster International and Inter-Colonial trade by the exchange of mutual concessions and preferential treatment with the Colonies and Great Britain.

Appendix I.

EXAMPLES PROVING THAT THE IMPOSITION OF A TARIFF DOES NOT NECESSARILY RAISE PRICES.

If America had pursued the policy of free imports she could never have developed her manufactures, but would have remained a huge agricultural country, exchanging her agricultural produce for British manufactures. Even as it is she experienced the greatest difficulty in developing her resources. Whenever she attempted to start an industry the British manufacturers killed it, by dumping down upon her a quantity of materials at low prices, and again raising the price as soon as the struggling industry had been ruined. It was only by imposing tariffs that such industries could be developed. But such import duties did not necessarily raise prices. Germany experienced similar difficulties with her iron and steel industries which were swamped by English produce and almost extinguished, until Bismark infused new life into these moribund industries, by the imposition of heavy import tariffs which have enabled Germany, not only to develop the industry, and compete successfully with us, but even to import into England large quantities of iron and steel rough and manufactured.

The manufacture of steel rails commenced in 1867; at that date steel rails cost 150 dollars per ton; the duty was changed to 28 dollars per ton, and in 1872 the price had fallen to 112 dollars; in 1874 it fell to 49 dollars; in 1876 to 59 dollars; and in 1885 to 27 dollars.

Sir Lyon Playfair the Apologist for the Cobden Club has endeavoured to account for this fall by improved process of manufacture, which of course has some slight share in it, but the only improvement that would very materially cheapen the cost of steel rails is the Bessemer process, which was invented as early as 1855 and was in full use long before the dates above mentioned. The reduction of price is fully accounted for by the fact that between 1868 and 1899 the output of steel rails in the United States increased from 8,618 tons to 2,270,000 tons, whilst the output of the United Kingdom decreased from 1,019,000 tons in 1890 to 3,38,000 tons in 1899.

The Manager of the Barrow Steel Company stated in evidence before the Royal Commission on Trade depression that in one year, 1884, his Company had paid £160,000 duty to the United States.

Mons. Thiers in his speech of January 22nd, 1870, stated that a tariff on Linen and Cotton thread had reduced the price of a kilogram of linen thread from 7 to 3½ francs, and that the price of Cotton Thread had been reduced in similar proportion; the British monopoly having been killed by the tariff.

Under the high protective tariff in the United States, between 1860 and 1883, Cotton hosiery was reduced to nearly one-half the prices prevailing in 1860.

In 1867 a protection duty was imposed on wool. In 1872 there were in the United States 143 looms producing 1,500,000 yards of

Brussels tapestry; in 1880 there were 1,070 looms producing 16,950,000 yards, and the price fell from 2.30 dollars in 1872 to 1.50 dollars in 1880 and to 93 cents in 1890.

Mr. Wycoff, United States Census Agent, stated that the average decline in the value of silk goods was not less than 25 per cent. probably as much as 50 per cent. in 15 years.

Salt under a tariff fell in price from 1 dollar and 80 cents in 1866 to 74 cents in 1882.

Mr. T. Dudley formerly United States Consul at Liverpool, gave the following rates of fall under the protective tariff between 1861 and 1883.

Cotton Goods ...	...	...	25 per cent.
Woollen Goods, Carpets, etc.	...	...	25 do.
Silk ...	35 per cent.	to	40 per cent.
Crockery ...	...	...	37 do.

In 1860 the duty on Crockery was 24 per cent. The tariff was increased to 40 per cent. which afterwards raised to 55 per cent., *ad valorem*, and now many kinds of crockery are sold in the United States at lower rates than in England.

The "American Economist" of October 2nd, 1891, gives the average retail prices of fifty-six articles in common use, at three periods. In the first column is shown prices in 1857, near the close of the last Free Trade of the United States; in the second column are the prices in 1889, a year before the McKinley Bill passed; in the next, or third column, is given the prices of 1890, during the electoral campaign; whilst the last column gives the prices after the passing of the McKinley Act. About four weeks previously a letter was sent to 1,400 official correspondents of the American Protective Tariff League, asking them to get these prices from the merchants of the vicinity. The returns have been most complete. In many instances the testimonies of three and four merchants are given. The correspondents did not ask a dealer's politics; they were simply instructed to get actual retail prices as they existed at the periods stated.

HAND-LOOM WEAVING IN INDIA.

BY RAOJI B. PATEL, M.R.A.C.,

Director of Agriculture and Industries, Baroda State.

In my paper on Hand-loom weaving, read before the last Conference at Benares, I tried to show that, if certain improvements be made in the hand-looms and preparatory machines, the increased production would exceed the total imports of cotton piece goods into the country. The following further calculation will make the idea clear:—

The production of hand-looms working in the country is estimated at 165 crore yards. The looms work at an average effective speed of twenty picks per minute, and if this can be increased to 50 picks, the increased production of the same number of looms would be $247\frac{1}{2}$ crore yards. This increase more than equals the total cloth imports of the country. As this increase can be produced by the same number of men as now engaged on the looms, the price per yard will be cheaper than at present, and their ability to withstand foreign competition will so far be increased.

I have been asked to give in this short paper some idea of the manner in which this consummation can be reached. Before any conclusions can be drawn, it will be necessary to enter into some details of the various classes of cotton piece goods consumed in the country and to limit the spheres of work of the Indian hand-loom, the Indian power-loom and of foreign looms.

Beginning with the coarsest, cotton goods consumed in India may be divided into the following four classes :

- (1) Very coarse goods, using 6^s to 16^s counts for warp and up to 20^s yarn for weft.
- (2) Coarse Mediums, 20^s to 26^s warp and 20^s to 40^s weft.
- (3) Mediums, 26^s to 40^s warp and 30^s to 50^s weft.
- (4) Fine, higher than 40^s warp and weft.

The following table gives a probable estimate in millions of yards of these classes of cloth consumed in the country, with their sources of production :—

No.	Class.	Warp counts.	Weft counts.	Indian hand-loom supply million yds.	Indian Mill-supply million yards.	Foreign imports million yards.	Total consumption million yards.	Percentage.
1	Coarse ...	6 ^s to 16 ^s	6 ^s to 20 ^s	900	60	300	1,260	26
2	Coarse medium.	20 ^s to 26 ^s	20 ^s to 40 ^s	150	500	1,100	1,750	37
3	Medium ...	26 ^s to 40 ^s	30 ^s to 50 ^s	450	40	750	1,240	26
4	Fine ...	over 40 ^s	over 40 ^s	150	...	350	500	11
Total ...				1,650	600	2,500	4,750	100

The bulk of the very coarse classes is woven on Indian hand-loom from Indian mill-yarn. This yarn is made from very inferior cotton and is not given a proper twist for warp. Some of the Bombay Mills tried to produce this class of cloth, but the yarn could not stand the speed of the power-loom, without a sizing of from 50 to 100 per cent., and as the people wanted cotton rather than size in the cloth they bought, the Mills had to give it up as a bad business. This cloth is very thick, warm and durable and is made everywhere in the country for local sale. This class may therefore be considered as coming within the absolute sphere of the hand-loom. Foreign cloth of this class in coloured designs and checks is being imported, but the weavers in Gujart, Northern India and most other parts of the country including Assam are now producing such cloth and with increased local production the foreign article may for the most part be supplanted.

The main bulk of the coarse medium class is made up of imported shirtings and Indian Mill-made shirtings, Chadders T-cloths, &c. This class forms over one-third of the total cloth consumption of the country and the supply is almost equally divided, between the Indian and foreign power-loom in Grey Goods, while bleached and coloured goods of this class come mostly from the United kingdom. The hand-loom has a very small share and produces goods of mixed colours. Coloured yarn does not take size enough to satisfy the Indian Mill-owners and they would not take to it, so long as the plain business is profitable. Coarse medium yarn is very strong and can stand any amount of rough usage in the power-loom and the hand-loom has therefore no ultimate chance against it. They are required for this class can all be produced from Indian cottons and the question of relieving the foreigner is one of time only.

The medium class consists mainly of Dhooties, Series, &c., consumed by the large body of the Indian middle class. Indian cotton is unsuited to produce warp yarn of this class, while the weft yarn produced by the Indian Mills is used up in weaving cloth of the coarse medium class by power-looms. Competition in this class is between the foreign looms and Indian hand-looms both using foreign yarn. A cheap machine, cheap home labour and the production of stronger cloth on account of proper dressing of yarn, are in favour of the hand-loom workers, while the power-looms cannot work so fast on this yarn, as on the coarse medium. If therefore, as postulated before, the hand-loom can be made to produce $2\frac{1}{2}$ times as much as it now produces, the extra production will cover all the grey goods of this class imported, leaving the supply of bleached and coloured or printed goods to foreigners. The swadeshi protection can help the hand-loom workers in this class a great deal, towards passing over the period of transition.

The production of the fine class is restricted to hand-loom and foreign power-looms, and the speed at which the power-loom can work on fine yarn being still further restricted, the hand-loom ought to be supreme in this class of work. The difficulty, however, comes in the want of bleaching and finishing. Of the 350 million yards of foreign imports, white Mulls and Nainsooks make up between them 333 millions. Both these cloths can be produced on hand-looms, especially in the humid districts of Madras and Bengal, but the Sun bleaching process adopted in the country, neither gives a fine feel to the cloth nor preserves its strength. Central bleaching and finishing factories in the fine weaving districts can alone help the weavers to get the upperhand in this competition. Recent experiments have shown the feasibility of producing Egyptian cotton in Sindh, Egyptian and long stapled tree cotton in Gujrat and American cotton in the United Provinces. With these cottons and proper arrangement for humidifying, mills in India equipped for fine spinning can easily compete with foreign mills in producing yarn up to 100 counts. When that day comes, the hand-looms can get a still greater advantage with the cheaper Indian yarn.

This enquiry into the details lead us to the conclusion that four factors have stood the greatest friends of the Indian weaver.

- (1) His slow speed of work.
- (2) Cheap machine and home labour.
- (3) Light sizing and proper dressing of yarn.
- (4) Production for local consumption.

In any efforts to improve his lot, these should not be lost sight of, and yet, the speed of his work should be increased in order, that, he may live and successfully compete. How

far can this be attained is therefore the first point requiring consideration.

Speed of hand-loom:—"Mr. Wallace of the Indian Textile Journal says:—"The object of the inventors should be to ascertain the best possible working speed, in picks per minute of the average weaver and then to adapt the mechanism of the loom to withstand this strain of work." Our enquiry suggests the addition of a rider to this proposition to the effect, that this speed should be restricted to the maximum working speed, that the yarn at the weaver's command would be able to stand in the climate at his disposal. Previous experiments undertaken during 1905 with various kinds of looms, and weavers from Gujrat, United Provinces and Bengal showed, that 100 to 120 picks per minute was the highest that an average Indian weaver could do. Experiments during 1906 have, shown however, that under the conditions enumerated above a working speed of steady 70 to 80 picks on a 45-inch loom is all that should be attempted. Higher speed than this brings in its train so many breakages of warp threads, that the effective speed is greatly reduced. An example taken from a high authority will make this clearer.

Mr. A. Chatterton, the Director of Industrial enquiries in the Madras Presidency, in a note submitted to the Madras Government, says that at Ahmednagar, Hungary cloth of 10^s yarn 30 inches wide and 28 picks to the inch was made on Churchill looms, the production in a day of 8½ hours being 30 yards. He mentions in the same report that the working speed was 160 picks per minute. The following calculation will show the effective speed:—

$30 \times 3 \times 12 \times 28 = 30,240$ total number of picks in the day.

$8\frac{1}{2} \times 60 = 510$ minutes, working time.

No. of effective picks per minute — $\frac{30,240}{510} = 60$.

The loss of time in stoppages due to breakages must have been great.

EFFECTIVE SPEED:—In working every loom stoppages are unavoidable. They are due to:—

1. Changing pirns in the shuttles and breakages in weft.
2. Flying out of shuttle.
3. Fixing temple and taking-up cloth.
4. Breakages in warp.

The time taken in changing pirns may be minimised by having a large pirn and a proper winding apparatus. The six-inch pirn taking up about a hank of 40^s yarn adopted by the power-loom may be taken as the limit in size. With such a pirn properly wound so as to minimise weft breakage, and the loom working at 80 picks, the time taken in stoppages may be reduced to 4 per cent.

Flying out of shuttle is mainly due to faults in construction

of the loom, unequal wearing of the shuttle and shuttle race, irregular working and high speed. All these can easily be avoided and even a shuttle guard can be added to the hand-loom sleys. Under proper conditions $\frac{1}{2}$ per cent. will be ample allowance for this.

The time taken in taking-up cloth and fixing temples every time after weaving six inches of cloth or so, amounts to over 12 per cent. Fixed temples with automatic taking-up motion is thus a necessity, not only for the production of even texture in cloth, but also for the saving of 12 per cent. in weaving labour.

Breakages in warp in what are called improved hand-loom take up the most time, and it is due to this, that the Indian weaver cannot be induced to adopt them. If a loom can be shown working faster than his own, on medium counts without more breakages than in his old loom, he would be quite willing and ready to adopt it. These breakages are due mainly to:—

1. Bad construction.
2. Bad beaming.
3. High speed.
4. Want of correct hygroscopic condition.

The first cause can be removed by the use of wood-working machinery and proper tools.

Bad beaming has probably a greater influence on breakages than any of the others. Weavers cannot be expected to invest in costly machinery for sizing, dressing and warping and the warps made and dressed in the country fashion, which gives a special advantage to hand-loom cloth, cannot properly be beamed by hand. The tension in the threads is uneven and causes a large number of breakages. The same difficulty was found in Baroda and the finding of a cheap beaming machine for country warps has given us more trouble, than any of the other appliances. We have at last succeeded in making such a machine and breakages are reduced by over 60 per cent.

It is really surprising, how there are practically no breakages up to a certain speed, and how fast they increase, as the speed is increased beyond the limit. This limit varies with the kind of yarn, the number of threads per inch in the reed, the breadth of cloth, etc., but a steady working spread of 70 to 80 picks on a 45-inch loom may be taken as a fair limit. The speed should be really limited, not by the number of picks per minute but by the shuttle velocity. Taking an average maximum shuttle velocity of 10 miles per hour, that the hand-loom yarn may be expected to withstand under the best conditions, the highest working speed for the various sizes of looms may be stated as follows:—

Loom to weave			picks per minute.	
27 inches cloth.			117	do.
Do.	36	do.	97	do.
Do.	45	do.	84	do.
Do.	54	do.	72	do.

These speeds are in the inverse proportion of 5, 6, 7 and 8, respectively.

To maintain a proper hygroscopic condition, the Indian weaver has stuck to his pit for ages. The only advantage of frame-loom is that they can be put upon upper-floors where land is dear, but even the power-loom factories have their looms on the ground floor and that ought to teach intending investors in hand-loom, that the nearer they have their looms to the ground, the better it is for their working. When the open part of the warp rests on a pit, in which a pail or two of water may be thrown when necessary, the dry surrounding air has very little action on the warp and it can be kept in proper condition for weaving without breakages. This seems to be the simplest and cheapest form of humidifiers and suits the hand-loom conditions admirably.

With these arrangements and a restriction of speed to 70 to 80 picks in a 45 inches loom, the breakages can be minimised and the stoppages due to them reduced to a maximum of say $12\frac{1}{2}$ per cent.

The total stoppages under these conditions, *viz.*, properly constructed looms, with large pirns and good winding, good beaming, a proper taking-up motion and a restriction of speed as above, may amount to as low as 17 per cent. Allowing double the time for stoppages as an average and making it one-third, and working at a steady speed of 75 picks per minute on a 45 inches loom, the effective speed would be 50 picks or $2\frac{1}{2}$ times the present effective speed of hand-loom. 50 picks effective on 45" loom with 40^s yarn, will be equal to 57 picks effective on a 36" loom or nearly the same as Mr. Churchill's loom working at 160 picks on 10^s counts. The average effective speed of Bombay power-loom on coarse medium goods is only about 100 picks per minute or double the effective speed of a properly improved hand-loom and on medium and fine goods, the power-loom will have a still small advantage.

The results of our enquiry may thus be summarized:—

1. The sphere of hand-loom influence being to some extent limited, all efforts should be directed towards the increased production of very coarse, medium and fine counts weaving, and of mixed, coloured and check designs of all classes of goods, leaving the weaving of coarse medium class to the power-loom.

2. For this work cheap looms should be constructed with proper taking-up motion and allowing easy working at a steady 10 miles an hour shuttle velocity or 80 picks per minute on 45" cloth of 40^s counts, without undue breakages.

3. The best looms for Indian use would be those that can be adopted to general purposes of weaving and not such as can be used for only simple cloth or twill.

4. This speed should be maintained with a full pirn of 6 inches taking about 840 yards of 40^s or half that length of 10^s counts.

5. Cheap beaming machines for properly beaming country dressed warps should be adopted.

6. Proper pirn winding machines to wind firm conical pirns are necessary.

7. All efforts at producing sizing and warping machines should be directed to preserving the use of the country system of sizing and dressing, and to accelerating the speed of work, sizing machines of the slasher type being entirely unsuited to hand-loom work.

For the last two years, there has been a great activity in the country in producing hand-looms of various designs and machines for preparatory processes, and every maker applauds his own goods. Many people have bought during the last year these—so-called improved looms and appliances and found them unsuitable, sometimes for want of a proper understanding of the business, but mostly on account of the machines themselves, being unsuitable. There is thus a great necessity of authoritative examination and report of all these machines which the people can take as a guide. There is sufficient material for such an examination in the Calcutta Exhibition, and I would strongly recommend the appointment of an expert committee by the Conference, to thoroughly test the loom section exhibits on the lines suggested by our enquiry, and publish a report. Any time given by busy men to this work and money spent by the Conference will, in my humble opinion, be well spent in the country's service and will not be grudged by the assembled patriots.

Introduction.—Having thus fixed the best looms and appliances, the next great question will be how to introduce them to the weavers and extend their use as quickly as possible. The most practical ways that suggest to me are:—

1. Weaving Schools.
2. Object Lessons.
3. Monetary help.

Weaving Schools:—Many weaving schools have been and are being started in the country, but few possess a well-equipped weaving factory, and without such a factory attached, where all preparatory processes and weaving in various branches suited to Indian conditions can be practically taught, the benefit derived from such schools will be very little indeed. The committee proposed above should be asked to recommend the proper equipment for school factories, and at least one school with such a factory attached should be started in every district. Baroda has sent in a model school factory to the Exhibition and I would request every member of the Conference interested in the industry to visit it. Any suggestions for additions and alterations will be gladly received and attended to. Such a factory completely fitted up ought not to cost more than Rs. 2,000 to any district and I am sure the district leaders can easily find

this capital. If proper fees be charged to cover the tuition charges and wastage of yarn and material by new students, a school with a factory as suggested and about 40 students, would pay all its expenses. Both theory and practice should be taught and proper attention paid to designing. It is said that the Indian weaver with his inherited skill cannot be matched in designing, but I am afraid that is an assumption not borne out by facts. Even in Benares, the home of design work in India, there are very few designers and all weavers in the sacred city have to dance attendance on these Ustads and their Chelas for the ground work of their sarees. At least one large well-equipped institution in every Province for training of teachers and designers is also an absolute necessity.

Object Lessons.—In every weaving centre, nay in every village, with a considerable number of weavers, men trained in these schools should be set up with improved appliances to weave the class of cloths, that may be the speciality of the place when once the weavers see that more work is turned out than they can do with their looms, they will not require any coaxing to adopt them. This can be done by every Swadesher with a small capital, not as a philanthropic work, but as a business. A few improved looms with a beaming machine can be set up either on his own account or lent to local weavers on condition, that they would pay for them by instalments after perfectly satisfying themselves, as to their usefulness.

Monetary Help :—Local capitalists and associations can do a very great deal in this direction. They can advance money for looms and improved appliances for yarn, store etc., and take the cloth produced for sale. In this way while helping the weavers, they would help themselves in earning a very good interest on their capital.

The Government of India have recently placed before all local Governments a comprehensive record of the results of the recent movement in this direction and many of the Provincial authorities are arranging to open weaving schools in suitable centres. The efforts of the Sholapur Municipality in financing the local weaving industry have been crowned with great success while successful co-operative weavers' unions have already been started at Benares and in some towns of the Madras Presidency.

It will not, therefore, be considered too much to hope, that with a cordial co-operation between the Government and the leaders of the people, as represented by the Municipalities, Local Boards and members of the District Associations of the Congress and the Conference in this matter, our country may once again attain to one of the highest positions in the production of cloth, and bring back the smile of satisfaction to those engaged in the industry, which holds the second place among the occupations of the country and the first among industries.

THE BEST INDIAN WOODS FOR THE MANUFACTURE OF MATCHES AND MATCH-BOXES.

BY RAI SAHIB UPENDRANATH KANJILAL, F.L.S.,
Instructor, Imperial Forest College, Dehra Dun.

In Sweden, the most noted match-manufacturing country of the world, Aspen (*Populus tremula*, Linn) is the wood found best suited for matches and match-boxes, and pines occupy the second rank as regards the former. In India Aspen does not grow anywhere indigenously. The nearest approach to it in botanical relationship is made by a tree which is found in Kashmir and the Punjab Himalaya as also in countries west of that region, such as Afghanistan and Baluchistan. But it is nowhere in great abundance and a great obstacle to increasing its stock is that it very seldom produces any flower or fruit. It can therefore reproduce itself naturally, chiefly by the shoots which spring from the roots, or artificially by means of cuttings. The botanical name of this tree is *Populus alba* and the Kashmiris call it *Jangli Frast*. The wood of this tree is not wholly unknown even in distant Bengal for it is in small round boxes made of this wood that we see grapes sold in the cold weather by the men known to us as Kabulis.

Although this wood is eminently well suited to the purpose, its small supply will preclude its use anywhere outside the Northern Districts of the Punjab.

'Pines' is a term applied loosely in commercial parlance to a number of trees which, although coming under the same Natural Order, Coniferae, belong to very different Genera or groups of it. None of the European pines, however, grow naturally in India; we have therefore to find their substitutes in the coniferous trees that are indigenous in our forests.

Before proceeding to select the most suitable woods it seems necessary to investigate briefly what characteristics should be sought for in such woods.

Both for the purpose of matches and match-boxes it is necessary that the wood should be easy to split and at the same time elastic and strong enough not to break in splitting or in bending to make the boxes; and for matches it is also necessary that it should take fire easily and should continue to burn steadily with a flame when ignited and that it should not emit an unpleasant smell in burning. It is also an essential point that the supply should be sufficient locally or be easily available in quantities where match factories are likely to be established.

To begin with the first characteristic, that of splitting with ease. This depends mainly on the structure of the wood. Avoiding anatomical and technical details, wood may be said to consist

of fibres which run parallel to the axis of growth and which in dicoty ledons (*i.e.*, in plants other than of the nature of palms, bamboos or ferns) are held together by thin fibrous plates which lie in vertical planes radiating from the centre of the tree. Ease in splitting depends on the length and straightness of the vertical fibres and on the fineness, regularity and abundance of the vertical plates which are called *medullary plates*. These plates are best seen on a transverse section where they show as radiating lines, like rays from a luminous point, either continuous or broken, and are usually and more aptly called *medullary rays*. Knotty wood is more difficult to split than wood free from knots, for around knots the fibres get twisted and are more closely packed, and there is generally much want of uniformity of structure in their neighbourhood. Some trees naturally grow straight and more or less free from knots and it is preferably from among these that we have to make our selection. When trees are grown scientifically in forests or plantations, they can be forced to grow straight and comparatively free from knots even though they would not do so in nature.

For the particular purpose of matches the wood should also be soft and light. A soft and light wood, provided the fibres are straight and elastic and the medullary rays fine, regular and numerous, splits with a smoother and cleaner surface than a heavy and hard wood. A little amount of strength and elasticity must be combined with softness, otherwise it would be impossible to obtain splinters of any required length, and the match-sticks would break in rubbing to ignite them. It is owing to want of strength that the refuse sticks of the jute plant known in Bengal as Pát-káti or Pan-káti though very soft and light are unsuitable for lucifer matches, although they were excellent for the old-fashioned sulphur matches of two generations ago, for which they were very extensively used.

In modern factories in Sweden the wood is first turned on lathes against a broad blade which peels off from it a long sheet of wood of the thickness of a match. This sheet is then cut up and split by machinery into separate sticks of the size of matches. But whatever be the process, the quality of wood sought for will remain much the same.

The second desideratum, that of taking fire easily, is also considerably affected by the softness and lightness of wood, for a soft and light wood takes fire more easily and if perfectly dry also burns steadily when ignited. A straight grained, soft and light wood has the additional advantage of drying quickly and thus becoming fit to burn well soon.

In the higher grades of lucifer matches the combustibility of the sticks is artificially augmented by impregnating them with a hydrocarbon like paraffin. Some woods like the pines are naturally resinous or oily. They can therefore to a certain extent

dispense with the hydrocarbon bath. Matches of inferior quality are tipped with sulphur to make them burn well.

The third property, that of not giving an unpleasant smell in burning, in respect of our Indian woods, has not yet been sufficiently investigated. But it will be seen that it is of comparatively small importance except for the very highest grades of matches; for although sulphur-tipped friction matches give a strong pungent smell, they hold their own in the market owing to their cheapness.

The question of supply is obviously of very great importance and is really a question of the geographical distribution of the species selected. I have already mentioned *Populus alba* which would be very suitable for the purpose, but which cannot be depended upon, as we cannot get enough of it from our forests and, as has already been said, there are serious obstacles to artificially increasing its stock.

In the description which I now proceed to give of the woods that seem to be suitable for matches and match-boxes, the above points have been kept in view as far as possible. I think it but proper to add that with the exception, perhaps, of the Conifers and the Poplars I possess no *certain* knowledge as to the actual suitability of any of the other woods mentioned. All that I have been able to do, during the short time allowed me for the paper, has been to go through the Wood Museum of the Imperial Forest College, Dehra Dun, which is admitted to be one of the finest in the world, and to closely examine those specimens which appeared to me most suitable. For the weights quoted as also for many other items of information I am indebted to the classic work of Mr. J. S. Gamble, M.A., F.L.S., F.R.S., C.I.E. (*Manual of Indian Timbers*).

1.—*Magnolia Griffithii*, Hook F. Vernacular Bor. *Gahori Sopa* (Assam). Wood soft, greyish white, weight 28 lbs. per cubic foot. Medullary rays fine, numerous, short. Habitat—moister parts of Assam including Cachar. Apparently not very abundant.

2.—*Bombax malabaricum*, DC. Vern. *Simul* (Bengal). The well-known Silk Cotton Tree. Wood very soft, greenish brown, containing a large percentage of phosphoric acid. Weight 17 to 32 lbs. per cub. ft. Medullary rays numerous. Habitat—throughout the plains of India, also Burma and Ceylon, generally affecting damp localities. Easy to grow both from seed and cuttings and very fast-growing.

3.—*Alianthus excelsa*, Roxb. Vern. *Maha-nim* (Uriya). *Ghor-karm* (Palamow). Wood white, soft. Weight 23 to 28 lbs. per cub. ft. Medullary rays numerous and close. Habitat—Chota-Nagpur, Northern Circars and the Coromandel Coast. Not very abundant but can be easily grown from seed and cuttings and is a remarkable fast-grower.

4.—*Boswellia serrata*, Roxb. Vern. *Salai* (Bengal). Wood white, moderately hard. Weight 28 to 40 lbs. per cub. ft. Medul-

lary rays, rather broad, very short, not very numerous. From point of structure this wood is not very suitable but it contains a gum-resin owing to which it gives an agreeable smell when burnt and matches made of it are likely to burn steadily and well. Habitat—dry hills from Rajputana to Chota-Nagpur, Orissa and Northern Circars: usually quite abundant where it grows.

5.—*Gomphandra axillaris*, Wall. Wood greyish white, soft. Weight 31 lbs per cub. ft. Medullary rays-broad. A small tree of Sylhet and the Malabar coast

6.—*Holigarna Beddomei*, Hook. F. Wood, greyish white and soft. Weight 26 lbs. per cub. ft. Medullary rays, fine and short, not very numerous. A large tree of the Western Ghats.

7.—*Spondias mangifera*, Pers. Vern. *Amra* (Bengal). Wood, greyish white and soft. Weight 20 to 30 lbs. Medullary rays—some fine and other broader, fairly numerous. Habitat—Sub-Himalayan forest, Assam, Eastern Bengal, Burma and the Deccan. Grows very fast and can be very easily propagated by cuttings.

8.—*Sesbania grandiflora*, Pers. Vern. *Bak* or *Bak-phul* (Bengal). Wood, soft and white, weighing about 30 lbs. per cub. ft. Medullary rays-fine, numerous. It is not an indigenous forest tree but can be easily grown in Bengal and most other parts of India.

9.—*Erythrina suberosa*, Roxb. Vern. *Dholdhak* (Hind.) Wood, very soft, whitish. Weight 17 to 20 lbs per c. ft. Medullary rays-short and broad. Habitat—dry forests of India and Burma.

Other species of *Erythrina* of which *E. indica*, Lam., is well known in Bengal as *Palitamadar* occur in E. Bengal and Burma and have wood very similar to the above.

10.—*Pithecolobium lobatum*, Benth. Vern. *Tanyin* (Burma.) Wood, grey, moderately hard. Weight 30 to 35 lbs. per c. ft. Medullary rays-very fine and numerous. Habitat—tropical forests of Burma.

11.—*Gyrocarpus Jacquini*, Roxb. Vern. *Pitella* (Uriya). Wood, grey, soft. Weight about 22 lbs. per c. ft. Medullary rays-very short and moderately broad. Habitat—Orissa to N. Circars and the Deccan, also Cocos Islands.

12.—*Tetrameles nudiflora*, R. Br. Vern. *Sandugaja*, (Bengal). Wood, white, soft. Weight per c. ft. about 24 lbs. Medullary rays fine but clearly marked. Habitat—Darjeeling Terai and the Garo Hills: also Burma and the Western Coast. Much used for tea-boxes.

13.—*Anthocephalus Cadamba*, Mig. Vern. *Kadam* (Bengal). Wood, whitish, somewhat hard, weighing about 40 lbs. per cub. ft., often of an unpleasant smell. Medullary rays fine and numerous. Very common in E. Bengal and Assam and in the Darjeeling Terai. Also found in the forests of Pegu in Burma. Growth very fast.

14.—*Hymenodictyon Obovatum*, Wall. Vern. *Sirid* (Maratti). Wood, brownish grey, soft and smooth-grained, weighing about

28 lbs. per c. ft. Medullary rays-some fine and close, others broad and distant. A large tree of the W. Ghats.

Very similar but having a somewhat harder wood is *Hymenodictyon excelsum*, Wall. Vern. *Bhalena* or *Bhaultan* (Hind.), which is found in dry forests throughout India.

15.—*Cordia Myxa*, Linn. Vern. *Bahal* (Bengal); *Lassora* (Hind). Wood, greyish, somewhat hard. Weight, very variable, the average being about 33 lbs per c. ft. Medullary rays-short, moderately broad and fairly numerous. Habitat—India and Burma, mostly in damp forests and ravines up to 5,000 ft.

16.—*Wightia gigantea*, Wall. Vern. *Bop*. (Lepcha). Wood, white, very soft and porous. Weight 14 lbs. per cubic ft. Medullary rays-uniform, rather broad. Habitat—Eastern Himalaya and the hills of Assam and Burma.

This wood will probably be found too soft for the purpose and there may be some difficulty in securing a large supply.

17.—*Gmelina arborea*, Roxb. Vern. *Gamar*, *Gambhari* (Bengal). Wood, brownish white, soft and even-grained. Weight about 36 lbs. per cub. ft. Medullary rays-short, moderately broad, and fairly numerous. Habitat—the moister regions of India and Burma.

It has a fair demand as timber, especially in Bengal, and will probably be found too valuable to use for matches.

18.—*Trewia nudiflora*, Linn. Vern. *Pithali* or *Pithuli Bhurkunda* (Bengal) Wood, white and soft. Weight about 30 lbs. per c. ft. Medullary rays-fine, numerous, uniform and closely packed. Habitat—Sub-Himalayan damp forests, also forests of Chittagong and Burma. Common about villages in some parts of Bengal.

19.—*Excoecoria Agallocha*, Linn. Vern. *Genwa* (Bengal). Wood, very soft and spongy. Average weight 25 lbs. per c. ft. Medullary rays-very numerous and extremely fine. Habitat—tidal forests of India, Burma and the Andamans; very common in the Sundarbans and extensively used in Calcutta for bedsteads and other kinds of cheap house furniture.

20.—*Broussonetia papyrifera*, Vent. The Paper Mulberry tree of Japan, Vern. *Molaing* (Burma). Wood, soft and greyish white, weight about 25 lbs. per c. ft. Medullary rays-rather broad and short but fairly numerous. Indigenous in the hills of Upper Burma and Martaban, but it can easily be grown in Central and Eastern Bengal to serve the double purpose of supplying wood for matches and bark for an excellent paper stock. The growth is fast and the tree produces shoots copiously from stools and roots.

21.—*Ficus hispida*, Linn. Vern. *Dumur* (Bengal). Wood, ash colour, soft and somewhat mottled. Weight about 32 lbs. per c. ft. Medullary rays-some fine and others broad in long narrow plates. Habitat—Bengal, Assam and the Outer Himalayan forests up to 3 500 ft.

22.—*Populus alba*, Linn. Vern. *Jangli Frast* (Kashmir); *Mal*. (Punjab). Wood, white or reddish white, soft, even-grained and elastic. Weight 28 to 44 lbs per c. ft. Medullary rays—very fine, numerous and regular. Habitat—from the Punjab Himalaya westward through Kashmir to Afghanistan and Baluchistan. This tree has already been mentioned. It is undoubtedly one of the best woods for matches, especially for match-boxes.

23.—*Populus ciliata*, Wall. Vern. *Bangikat* (Nepali); *Garpipal* (Kumaon). Wood, brownish grey and soft. Weight 25 to 35 lbs. per c. ft. Medullary rays—fine, numerous and regular. Habitat—Himalaya from the Indus to Bhutan, 4,000 to 10,000 ft.

The wood of this tree may be found almost as good as that of the last preceding species for matches and match-boxes. For a factory established in Bengal a supply can be obtained from Darjeeling, where another species of the same Genus, called *Sungribong* by the Lepchas is also found, the wood of which is expected to be of the same quality.

The following trees belonging to the Natural Order Coniferae are commonly known as pines. Some of their nearest allies are very extensively used in Sweden and Germany. Containing resin to a large or small extent, they burn very well and are, owing to the extreme regularity of the structure of their wood, peculiarly well suited to the purpose.

24.—*Pinus excelsa*, Wall. The Blue Pine. Vern. *Tongschi* (Bhutan); *Kail* (Jaunsar). Wood, moderately hard, reddish white. Weight about 30 lbs. per c. ft. Medullary rays, fine and numerous but rather irregular. Habitat—Western Himalaya and Bhutan.

25.—*Pinus longifolia*, Roxb. The Long-leaved Pine, Vern. *Chir* (Hind), *Gniel* (Lepcha). Wood moderately hard, reddish brown. Weight 35 to 45 lbs. Medullary rays as in the preceding species. Habitat—Outer Himalaya from Afghanistan to Bhutan.

26.—*Picea Morinda*, Link. The Himalayan Spruce. Vern. *Bai* (Hind). Wood, white, fairly soft, weighing about 30 lbs. per c. ft. Medullary rays—fine and very numerous. Common in the Himalaya, generally above 7,000 ft. from Afghanistan to Bhutan.

27.—*Abies Pindrow*, Spach. The Himalayan Silver Fir. Vern. *Morinda* (Hind). Wood, white and soft. Weight rather less than 30 lbs. per cub. ft. Medullary rays—very fine, very numerous and regular but rather short. Habitat—Outer Himalaya between 7,000 and 9,000 ft., westward from Nepal.

This, as well as the last preceding tree, will probably be found to be the best procurable in India for matches. For match-boxes, however, it is feared that they will prove too brittle to stand the usual process of manufacture.

To the above list may be added thick-walled straight bamboos like *Bambusa Balcooa*, Roxb. and *Bambusa Tulda*, Roxb. so common in Bengal. The inner soft tissue when sufficiently dry burns very well, and the internodes can be split into match sticks most easily, especially when green, without the help of any special machinery.

If match sticks are made out of bamboos, match boxes can also be made of the same material, preferably from the more hollow kinds. These boxes of course will be cylindrical instead of the usual rectangular shape. A long internode can be cut up into several pieces of the length of the matches. One of the open ends can be closed with a thin circular disk of any kind of wood to form the bottom, and the lid can be of another piece of bamboo internode plugged by another disk, as made to fit the other end of the tube,—somewhat like the wooden cases used in Homeopathic pharmacy. The mixture for the friction surface (phosphorus in the case of safety matches and powdered glass and glue in the case of ordinary friction matches) may be applied on either end of the tube or on a flat surface which can be easily prepared for it on the side. The cylindrical box can be as easily covered with paper and labelled as the ordinary rectangular boxes, perhaps even more easily.

It is recommended that if a match-factory be established in Calcutta or its neighbourhood, trial should first be given to such local trees as *Simul* (No 2), *Amra* (No 7), *Genwa* (No. 19) for matches, and to *Kadam* (No 13) and *Pithali* (No. 18) for match-boxes. If these prove suitable, the expense of obtaining Firs and Poplars from the hills will be saved.

I may add in conclusion that if samples be required of woods that are not locally available, application should be made for them to the Imperial Forest Economist, Imperial Forest College and Research Institute, Dehra Dun, who can arrange to have them forwarded from the nearest source.

